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The effect of explanations and monetary incentives on effort allocation decisions

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THE EFFECT OF EXPLANATIONS AND MONETARY INCENTIVES ON EFFORT ALLOCATION DECISIONS

by
Ronald Nathan Guymon

An Abstract

Of a thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Business Administration
in the Graduate College of
The University of Iowa

August 2008

Thesis Supervisor: Professor Ramji Balakrishnan

ABSTRACT

In this study I examine the joint effect of explanations and monetary incentives on employees' effort allocation decisions in a multi-action setting. A rich literature in economics indicates that monetary incentives substantially influence employees' decisions. This literature demonstrates that the size of the incentive for a given performance measure should consider the measure's sensitivity, congruence and precision. Research in psychology demonstrates the decision influencing effects of explanations (a non-monetary factor) on employees' decisions through perceptions of fairness. I expect that effort allocation decisions are influenced *both* by explanations and monetary incentives: I hypothesize that providing reasonable and complete explanations substantively alter agents' action choices relative to a setting with monetary incentives alone. Using student subjects in experiments, I find that monetary incentives matter. Moreover, for sizeable monetary incentives, providing a detailed explanation modifies behavior favorably relative to when an unclear explanation is provided. However, for all of the considered monetary incentives, merely requesting a desired course of action is also enough to modify behavior favorably. This study contributes to the accounting literature by providing evidence of a decision influencing benefit associated with the use of explanations such as causal maps employed by firms adopting the balanced scorecard. This study also contributes to the organizational justice literature by providing evidence regarding the interaction effect of multiple antecedents of justice.

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CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

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To Rachelle, Mom, and Dad who encouraged me to never give up.

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ABSTRACT

In this study I examine the joint effect of explanations and monetary incentives on employees' effort allocation decisions in a multi-action setting. A rich literature in economics indicates that monetary incentives substantially influence employees' decisions. This literature demonstrates that the size of the incentive for a given performance measure should consider the measure's sensitivity, congruence and precision. Research in psychology demonstrates the decision influencing effects of explanations (a non-monetary factor) on employees' decisions through perceptions of fairness. I expect that effort allocation decisions are influenced *both* by explanations and monetary incentives: I hypothesize that providing reasonable and complete explanations substantively alter agents' action choices relative to a setting with monetary incentives alone. Using student subjects in experiments, I find that monetary incentives matter. Moreover, for sizeable monetary incentives, providing a detailed explanation modifies behavior favorably relative to when an unclear explanation is provided. However, for all of the considered monetary incentives, merely requesting a desired course of action is also enough to modify behavior favorably. This study contributes to the accounting literature by providing evidence of a decision influencing benefit associated with the use of explanations such as causal maps employed by firms adopting the balanced scorecard. This study also contributes to the organizational justice literature by providing evidence regarding the interaction effect of multiple antecedents of justice.

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CHAPTER 1

INTRODUCTION

Performance in multi-action settings has been the focus of an increasing amount of research (e.g., Farrell, Kadous, & Towry 2007; Fehr & Schmidt 2004; Datar, Cohen-Kulp, & Lambert 2001). In these settings, both the magnitude and the composition of effort matters: employees could exert the desired level of effort but still not benefit the firm because they do not allocate their effort well. Considerable analytic and empirical research (e.g., Kachelmeier, Reichert, & Williamson 2008; Brüggen & Moers 2007; Datar et al. 2001) therefore has focused on the ability to motivate the desired mix of effort by using monetary incentives tied to multiple measures. In this study, I draw on psychological research on informational justice (Colquitt, 2001; Shaw, Wild, & Colquitt 2003; Greenberg 1993) to posit that providing reasonable and complete explanations can effectively complement the use of monetary incentives to motivate desired effort allocations by employees.

A rich literature in economics (e.g., Datar et al. 2001; Feltham & Xie 1994; Banker & Datar 1989; Holmstrom 1979) explores how the monetary incentives associated with measures of performance influence actions. This research usually constructs optimal contracts assuming common knowledge about the agents' utility functions and performance measures. However, in practice it is costly to obtain accurate information regarding performance measure characteristics and employee risk preferences. Moreover, the same or similar contracts are offered to numerous employees. In these settings, non-monetary factors might have an important role in motivating

employees. In this paper, I investigate the influence of provision and quality of explanations in motivating the desired allocation of effort on action choices.

Explanations play many roles. First, explanations *supply* people with knowledge about what actions to take and thereby play a vital role in managing organizations. For example, a business theory explains how an organization should use its resources to achieve its mission within the environment in which it operates (Drucker 1994, p. 100). Similarly, the Balanced Scorecard philosophy advocates the use of causal or strategy maps to explain the cause-and-effect linkages among specific tasks by which strategic objectives are achieved (Kaplan & Norton 2000). Researchers have noted the decision facilitating benefits of using causal maps to explain the relationship between employees' activity and corporate strategy (Farrell et al. 2007; Tayler 2007; Vera-Muñoz, Shackell, & Buehner 2007). A second important role of explanations is to justify outcomes and thereby *motivate* a desired set of actions. For example, firms may excuse poor performance because of external factors (e.g., weather, market prices, etc.) to attract needed investments (Bettman et al. 1983, p. 182). Firms may also use explanations as a way to justify lucrative long-term incentive plans, and reduce stakeholders' concerns of corruption among upper echelons of management (Zajac et al. 1995, p. 284). In the context of the Balanced Scorecard, causal maps have a motivating influence on employee performance. Kaplan and Norton (1996) write, "Communicating the balanced scorecard promotes commitment and accountability to the business's long-term strategy. As one executive at Metro Bank declared, 'The balanced scorecard is both motivating and obligating.'" Empirical evidence from the organizational behavior literature (Colquitt 2001; Colquitt et al. 2001) suggests that explanations motivate behavior through

perceptions of fairness.[1] Thus, it seems plausible that explanations about the importance of certain tasks would have a motivating force on employee behavior that is independent of monetary incentives. In particular, I examine if the intrinsic incentives provided by explanations complement the use of extrinsic monetary incentives to move agents toward the desired effort allocation.

In my experiment, students play the role of production managers who must decide how to allocate their (fixed) effort between two tasks. The probability of achieving success on either task is proportional to the percentage of effort allocated to it. Because neither the allocation decision nor the outcome of the tasks is directly observable, participants are offered bonuses that are contingent upon the performance measures. While these performance measures perfectly measure unsuccessful performance, they imperfectly measure successful performance. In all experimental conditions, the performance measure for one task has a higher probability of indicating success (has greater precision) than the performance measure for the other task.

The between-subjects experimental design has two levels of bonuses crossed with four types of messages from the supervisor. The bonuses are either the same size for each task, or offer a considerably greater bonus for the task whose measure is less precise (to compensate for the greater risk). Parameters were selected so that an equal allocation of effort would be preferred only by extremely risk loving participants. When bonuses are equal (unequal), there is a strong incentive to allocate more effort to the precisely (imprecisely) measured task. The four levels of messages from the supervisor are no

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[1] As detailed later, its effect on perceptions of fairness is independent from the procedural and interpersonal factors used to determine rewards, and the distribution of the reward itself.

message, a message that requests an equal allocation of effort, a message that includes a reasonable and complete (coherent) explanation for the requested allocation of effort, and a message that includes an incoherent explanation for the requested allocation of effort.

Consistent with economic predictions, results indicate that increasing the size of the bonus on the imprecisely measured task increases the effort allocated to that task. I also find considerable support for non-pecuniary motivations. In particular, a message from the supervisor with an explanation to make an equal allocation of effort reduces the spread in the effort allocated to the tasks (i.e., makes the effort allocation more equal) relative to when the supervisor does not send a message. Providing a coherent justification with the request to make an equal allocation of effort has no incremental effect on action, but it does influence opinion towards the incentive contract. In particular, relative to when the supervisor merely requests an equal allocation of effort, a coherent explanation increases the perceived justifiability of bonuses when the bonuses are of equal sizes, but decreases this perception when bonuses are unequal. Finally, the incoherent explanation makes effort allocation more equal when there is a relatively small expected opportunity cost, 50¢, but not when the expected opportunity cost increases to 200¢.

The results of this study make three contributions. First, this study contributes to the analytic and empirical literature on multi-action settings by providing evidence regarding the influence of non-monetary incentives. The motivating impact of non-monetary incentives implies that control systems can be more effective and efficient by taking into account non-monetary incentives. In particular, coherent explanations benefit firms by motivating better performance than incoherent explanations and by increasing

the perceived justifiability of bonuses when the bonuses correspond to the importance of the tasks. While coherent explanations fail to motivate better performance than when no explanation is provided, this result should be interpreted cautiously since the explanation also provides contextual information that is absent when no explanation is provided, which may not be true in all settings.

Second, the study contributes to the organizational justice literature by providing evidence on the interaction effect of monetary incentives and explanations on the perceived justifiability of incentive contracts. The majority of extant accounting studies investigate the motivating influence dimension of fairness that is influenced by how monetary rewards are distributed—a dimension of fairness that is referred to in the organizational justice literature as "distributive justice". However, the organizational justice literature provides evidence that a variety of process factors also influence perceptions of fairness. Colquitt (2001) indicates that more research is needed on how multiple antecedents of fairness interact with one another. The results of this current study indicate that explanations may reduce the perceived justifiability of excessively large monetary incentives, even if those monetary incentives benefit the employee relative to alternative monetary incentives.

Finally, consistent with economic predictions, the results from this study indicate that the monetary incentives used to align goals should consider the precision with which the performance measures capture actual effort allocation. This implies that when using the Balanced Scorecard philosophy to align employee behavior, monetary incentives should also consider the risk that employees bear as a result of imprecision in the performance measures.

This research could be extended in at least three ways. First, more insight regarding the boundary conditions of obedience to an unfavorable request would increase the external validity of this study. There are several potential boundary conditions to investigate, including the context in which the request and allocation decision is made, the reason used to explain the requested allocation of effort, and how long obedience persists beyond one work session. Second, the effect of additional antecedents of fairness could be investigated in conjunction with explanations such as allowing participants to voice their opinion about the bonuses, the expected profit of the company relative to the expected profit of the employee, or the availability of other performance measures that may be more precise, but less congruent with company's goals.

The remainder of this paper is organized into four sections. In the second section, I review related literature on the independent effects of explanations, monetary incentives, and their combined effect. In this section I also explain the setting that I employ to investigate these effects, and make hypotheses. In the third section I explain the methodology (experimental procedure, design, and measures) I use to test my hypotheses. In the fourth section I discuss the statistical tests that address the hypotheses, and the corresponding results. Finally, in the fifth section I summarize my findings, describe the implications of these findings, and acknowledge some limitations of this study.

CHAPTER 2

THEORY AND HYPOTHESES

I begin by discussing fairness research from the organizational justice literature. I focus on the effect of explanations on perceptions of fairness and performance, and provide examples from the Balanced Scorecard literature. Next, I review research that examines how properties of performance measures, and the associated monetary incentives, influence effort allocation decisions. Then, I discuss research evidence regarding the joint effect of explanations and monetary incentives on effort allocations. Finally, I describe the setting in which I investigate these effects, and present the hypotheses.

2.1 Perceptions of Fairness

A substantial body of evidence indicates that perceptions of fairness have a large impact on economic behavior (Adams 1965; Kahneman, Knetsch, & Thaler 1986; Rabin 1993; Folger & Cropanzano 2001; Fehr, Klein, & Schmidt 2007; Berg, Dickhaut, & McCabe 1995). As shown in Figure B1, the organizational justice literature divides fairness, which many refer to as *justice*, into two main categories, distributive justice and procedural justice. Distributive justice focuses on how fairly outcomes are distributed, while procedural justice focuses on the process used to determine the outcomes (e.g. Folger et al. 2001). Procedural justice is important because of the impact that it has on behavior even when the quality of distributive justice is low. Literature indicates that even when outcomes are unfavorable, high levels of procedural justice lead to more favorable reactions than low levels of procedural justice (e.g., Brockner & Wiesenfeld

1996; Folger et al. 2001). Anecdotal examples also suggest that even favorable outcomes may not lead to high levels of performance if there is a low level of procedural justice (Kim & Mauborgne 1997). While many scholars have focused on the distributive dimension of justice (e.g., Berg et al. 1995; Hannan 2005), the role of procedural justice has been identified by Konovsky (2000) as potentially becoming "one of the linchpins that carry organizations into the tumultuous 21st century, where rapid change and increasingly complex human resources management issues become even more a concern of organizational life."

As also shown in Figure B1, perceptions of procedural justice are influenced by the structural procedures (formal procedures) of the organization and by the person who enacted the procedures (interactional justice) (Konovsky 2000).[2] Further, perceptions of interactional justice are influenced by the quality of interpersonal treatment (interpersonal justice) as well as the explanations employed by the person enacting the procedures (informational justice) (Bies & Moag 1986; Greenberg 1993; Shapiro, Buttner, & Barry 1994). A meta-analysis by Colquitt (2001) indicates that separating justice into four dimensions (distributive, procedural, interpersonal, and informational) is valuable in terms of variance explained. Konovsky (2000) indicates that research investigating procedural justice should investigate the unique effects of the different dimensions of justice. Because explanations are components of informational justice (see Figure B1), I draw upon the informational justice literature to predict the effect of explanations on performance.

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[2] There is some dispute (Colquitt 2001) as to whether interactional justice is a separate dimension of the justice construct, rather than a sub-category of procedural justice, as depicted in Figure B1.

2.1.1 Informational Justice

Informational justice concerns what is right with respect to "the quality of explanations provided to people that convey information about why procedures were used in a certain way or why outcomes were distributed in a certain fashion" (Colquitt et al. 2001, p. 427). While informational justice has been investigated by manipulating the quality and/or the provision of an explanation given by the authority figure that enacted a procedure, Shaw et al. (2003) indicate that a better understanding of informational justice could be gained by considering explanation adequacy and provision together (Shaw, Wild, & Colquitt, 2003, p. 452).

Bies and Moag (1986) are the first to suggest that the truthfulness of information and the presence of a justification influence perceptions of justice. In a participative budgeting setting, Libby (1999) demonstrates that the provision of a reasonable explanation for why a difficult performance target is chosen, when preceded by allowing participants to offer some input about what the performance target should be, leads to high levels of performance. Bies and Shapiro (1987) hypothesize that using causal accounts to explain a person's responsibility for actions increase perceptions of justice because those explanations help eliminate worst-case readings of the decision maker's intentions. While providing an explanation increases perceptions of justice relative to when no explanation is provided, Bies and Shapiro (1987) also find that it is the adequacy of the explanation, rather than the mere provision of an explanation, that accounts for the variance in peoples' actions.

In fact, an inadequate explanation may be more detrimental than failing to provide an explanation. Based on the results of a meta-analytic review of the informational

justice literature, Shaw et al. (2003) find that the beneficial effects of an adequate explanation are more pronounced when compared to an inadequate explanation rather than to the absence of an explanation (Shaw, Wild, & Colquitt, 2003, p. 451). Shaw et al. posit that the reason why an inadequate explanation may be more detrimental than failing to provide an explanation is because not only does an inadequate explanation fail to eliminate worst case readings of the supervisor's intentions, but the inadequacy of the explanation itself may violate some ethical standard (Shaw, Wild, & Colquitt, 2003, p. 452). For instance, Greenberg (1993) demonstrates that an explanation based on information that is directly acquired by an expert source, publicly revealed, and double-checked for accuracy leads to more cooperative behavior than an explanation that does not include those attributes. In addition, Shapiro et al. (1994) show that the reasonableness, adequacy, specificity, and timeliness of an explanation increase perceptions of fairness.[3]

This evidence from the informational justice literature regarding the characteristics and consequences of explanations provides a theoretical foundation in support of the use of adequate explanations in business settings. Specifically, the informational justice literature suggests that processes or devices that clarify the effect of employees' actions on company goals should motivate the employees to make goal-congruent actions. One example of such a device is a causal map. Briefly, a causal map increases perceptions of informational justice by providing reasonable and complete explanations for why certain actions are strategically important for the company.

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[3] Both the Greenberg (1993) and the Shapiro et al. (1994) studies indicate that the informational justice component of fairness has an effect that is independent from the quality of the interpersonal treatment displayed by the authority figure enacting the procedure.

Kaplan and Norton (1992) say, "The scorecard puts strategy and vision, not control, at the center. It establishes goals but assumes that people will adopt whatever behaviors and take whatever actions are necessary to arrive at those goals. The measures are designed to pull people toward the overall vision." In conjunction with the balanced scorecard, Kaplan and Norton advocate using causal or strategy maps as a means of translating a company's business strategy into an implementable set of actions (Kaplan & Norton 2000; Kaplan & Norton 2004). Such a map identifies a company's vision, critical objectives that make up the strategy, the causal relationships among them, and the drivers of those objectives. This process helps companies identify the specific performance measures to include on its balanced scorecard, and succinctly communicate the company's strategy to the whole organization. One proponent of the Balanced Scorecard philosophy claims that all supervisors within an organization should be able to use a causal map to explain how and why their employees' actions contribute to the organization's strategy and mission (Paladino, 2007). In sum, rather than haphazardly choosing a variety of measures to include on a balanced scorecard, the measures should be selected based on a carefully crafted causal map, which should be based on the company's strategy and vision.

A variety of practices are also advocated by proponents of the Balanced Scorecard philosophy to ensure that the causal map motivates goal congruent actions. For instance, many companies allow all of their employees to see performance on the various balanced scorecard performance measures so that they can see for themselves how effectively the strategy is working (Atkinson, Kaplan, Matsumura, & Young 2007, p. 423). In addition, Ittner & Larcker (2003) indicate that continually validating and refining a causal map,

together with multiple performance measures, allows for at least two other benefits: 1) it ensures that a strategy remains effective in a changing environment, and 2) it deepens the company's understanding about the underlying drivers of economic performance.

In essence, by linking employees' actions to the company's strategy, causal maps provide a reasonable and complete explanation for why employees should make certain actions. Furthermore, a causal map allows the validity of the links between actions and their effects on strategy to be continuously verified, and communicated in a timely manner to all employees throughout the organization. A comparison of these practices with the information in Figure B1 indicates that these practices are all important criteria for achieving high levels of informational justice.

2.2 Monetary Incentives

Of course, effective implementation of any performance plan (including a balanced scorecard) relies on the monetary incentives it offers. Kaplan and Norton (2004) write:

> Achieving alignment is a two-step process. First managers communicate the high-level strategic objectives in ways that all employees can understand…The goal of this step is to create *intrinsic* motivation, to inspire employees to internalize the organization's values and objectives so that they want to help the organization succeed. The next step uses *extrinsic* motivation. The organization has employees set explicit personal and team objectives aligned to the strategy, and establishes incentives that reward employees when they meet personal, departmental, business unit, and corporate targets. (emphasis added)

Agency research in accounting (e.g., Holmstrom, 1979; Datar et al. 2001) has provided considerable insight about how to use performance measures to create monetary

rewards.[4] This literature draws upon economic theory to indicate additional factors that should be considered for determining ex ante incentive weights, and how those factors should be incorporated into the incentive weight. This literature often employs a LEN[5] model to calculate incentive weights.

In a single-action setting, Holmstrom (1979) shows that any performance measure that is even slightly informative about an agent's action should be contracted upon because it increases the overall precision with which the overall performance measure captures actual effort. Thus multiple performance measures are useful to the extent that they decrease the cost of motivating high levels of effort. However, Banker & Datar (1989) show that the optimal incentive weights placed on those performance measures are positively related to their sensitivity and precision (loosely, it's signal-to-noise ratio). The positive relation between incentive weight and precision arises because precision in the metric reduces the risk premium, and therefore the overall cost of inducing a given level of effort.[6]

Extending this research to a multi-action setting, Feltham and Xie (1994) demonstrate that the value of a performance measure is also a function of its congruence,

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[4] There is an on-going debate about the costs and benefits of fixing incentive weights ex ante. For instance, we could compensate employees using weights determined ex post and subjectively. The benefit of discretion in contracting is that it permits employees' incentive compensation to be based on non-contractible information (e.g. Gibbs et al. 2004; Fehr et al. 2004). However, the drawback is that it is also subject to biases that result from cognitive limitations or ulterior motives (e.g., Ittner et al. 2003; Lipe & Salterio 2000). Research investigating this strategy often employs psychological theories to identify and explain biases that affect incentive weights.

[5] A LEN model has the following features: the agent's contract is a linear function of information, the agent has a negative exponential utility function, the outcomes are normally distributed, and the principal is risk neutral.

[6] Infinite precision leads to a forcing or costless contract in a single-action setting.

i.e. its ability to motivate the desired allocation of effort. Thus, if two tasks are equally important in terms of achieving the company's strategy, but one task is measured with less precision than the other, then the imprecise performance measure should have a larger incentive weight than the precise performance measure in order to induce the agent to allocate an equal amount of effort to each task (see also Datar et al. 2001).[7]

In sum, the agency research in accounting offers two insights that are particularly applicable to how we ought to weight multiple performance measures. First, this research demonstrates that employees' actions can be aligned with firm goals by linking extrinsic incentives to the performance measures. Second, all else equal, inducing equivalent effort on a task that is imprecisely measured requires a larger incentive weight on the associated performance measure.

2.3 The Combined Effect of Monetary and Fairness-Related Incentives

My primary research question investigates the combined effect of both monetary and fairness related incentives. Thus, my research fits into literature that examines the interplay between extrinsic rewards and intrinsic motivation.

While a number of studies have demonstrated an effect of fairness-related incentives, the majority of them do so in the absence of pay-for-performance incentives (e.g., Fehr, Gachter, & Kirchsteiger 1997; Hannan 2005). On the other hand, the majority of economic research that deals with monetary incentives ignores the impact of

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[7] Risk- and effort-aversion are common sources for the need for motivating desired actions. However, several studies employ other sources (e.g., career concerns, preference for some kinds of effort) to create the need for extrinsic incentives that motivate employees to allocate effort in accordance with the firm's goals (Darrough & Melumad 1995; Milgrom & Roberts 1988).

non-monetary incentives. Given the evidence that supports the pervasiveness of both types of incentives, it would seem that they are not mutually exclusive. Indeed, some economic research shows that both types of incentives can coexist (e.g., Anderhub, Gachter, & Konigstein 2002; Keser & Willinger 2000).

In contrast, some economic research draws upon social psychology literature to hypothesize that economic incentives "crowd out" the effect of intrinsic incentives (Frey & Oberholzer-Gee 1997; Kreps 1997; Fehr & Gachter 2002). However, there is some disputation regarding whether or not the "crowding out" effect really exists (e.g., Cameron & Pierce 1994; Prendergast 1999). Fehr and Gachter (2002) note that the question of interest is not whether monetary incentives should be used at all. Rather the question of interest is when are incentive contracts fairness-compatible in the sense that they do not destroy the effect of fairness-related incentives on behavior. For example, Fehr and Gachter (2002) show that a simple incentive contract that includes a punishment for shirking reduces the fairness-related effort, while Anderhub et al. (2002) show that incentive contracts that allow for return sharing are fairness-compatible. While these studies indicate that monetary and fairness-related incentives can co-exist, their joint effect is investigated in a single-task setting where effort level is the only concern.

There is limited research on the joint effect of monetary and non-monetary incentives in a multi-action setting where effort is observable by the employer, but not always verifiable (Fehr, et al. 2004; Brüggen, et al., 2007). Fehr and Schmidt (2004) find that when given a fixed wage and a subjectively determined bonus, distributive justice-related incentives induce employees to make effort allocations that are more aligned with the company's goals than when employees are given a piece-rate incentive contract. In

contrast, Brüggen and Moers (2007) find that social incentives lead to effort allocations that are more aligned with the company's goals when employees are given a piece-rate incentive contract rather than a fixed wage. My current study complements this literature in two ways. First it provides evidence on the effect of a unique, non-monetary incentive, informational justice, on employees' effort allocation decisions. Second, it investigates these effects in a setting where the employer cannot observe employee effort.

2.4 Hypotheses

I investigate a setting in which extrinsic rewards are crucial because the agent's effort choices are not observable. Consequently, the employee's incentive contract must be based on performance measures, or imperfect proxies of output. The incentive contract helps align the employee's effort allocation with the company's goals by changing the size of the incentive weight given to each performance measure. I then investigate if reasonable and complete explanations complement the use of monetary incentives to align the employees' effort allocation decisions with the company's goals.[8]

I use a setting in which there are two tasks, and where one is measured with less precision than the other.[9] Also, the firm's revenue is maximized by an equal allocation

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[8] In contrast, because of their focus on distributive justice, Fehr and Gachter (2002) and Brüggen and Moers (2007) consider settings in which the incentive contract is only based on the performance in one task. The other task is non-verifiable and therefore non-contractible. Furthermore, effort is observable, meaning that a fixed-wage contract is a reasonable solution.

[9] A fixed-wage contract is also a reasonable solution in this setting, but not in a setting where one task is costlier than the other. While making one task more costly than the other would be a simple feature to include in this experiment, it also presents a significant amount of cognitive effort to process that additional information. Furthermore, it introduces the possibility of biasing the results if participants focus on the cost of the task, rather than the profit of the task and the precision with which it is measured.

of effort between tasks. This relationship between firm revenue and effort allocation is depicted in Figure B2.

The baseline condition that I will use to investigate the joint effect of both types of incentives is a setting in which only monetary incentives are offered for performance, and no message is sent from the supervisor to the employee. Based on the reasoning from the agency literature in accounting, I expect that the amount of effort allocated to the imprecisely measured task will increase with the size of the incentive weight placed on its corresponding performance measure. Accordingly, my first hypothesis follows:

H_1: When the employee does not receive a message from the supervisor, the amount of effort allocated to the imprecisely measured task is positively related to the incentive weight placed on that task.

Note that this hypothesis predicts the effect of monetary incentives on the amount of effort allocated to the imprecisely measured task, and not on firm revenue. Because the firm's revenue is maximized when the employee makes an equal allocation of effort between tasks, firm revenue will actually decline as the employee allocates more than half of his effort to the imprecisely measured task. Thus, firm revenue and the size of the imprecisely measured task's incentive weight have an "inverted U" relationship in the sense that firm revenue first increases in the imprecisely measured task's incentive weight, but eventually decreases. Consequently, using only monetary incentives to motivate the employee to make an equal allocation of effort is a difficult task unless the employee's risk preference and utility function are known ex ante. I expect that coherent explanations regarding an equal allocation of effort will help resolve this problem.

To isolate the impact of explanations on effort allocations, I control for the impact of merely knowing the supervisor's desired effort allocation by including a condition in which the supervisor merely requests the participants to make an equal allocation of effort. A body of psychology research specifies various factors that lead people to obey requests when they would rather not. In particular, a well-known series of experiments reveals that laboratory participants exhibit a surprisingly high level of obedience to an authority figure even when the authority figure request a morally aversive action (Milgram, 1974).[10] However, when the experimenter is physically absent the level of obedience significantly decreases (Cadsby, Maynes, & Trivedi, 2006; Milgram, 1974).[11] Based on the results from this literature, I expect that a mere request from the supervisor to make an equal allocation of effort will result in more equal allocations relative to when the supervisor does not make such a request. However, if the request to make an equal allocation of effort comes from a fictitious supervisor who cannot observe the participants' behavior, I do not expect that the majority of participants will obey. Specifically, I hypothesize that a request will decrease the size of the "inverted U" relation between firm revenue and the imprecisely measured task's incentive weight. Accordingly, I posit a second hypothesis:

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[10] In the baseline condition Milgram (1974) finds that 65 percent of participants exactly obey the experimenter who was administering the experiment.

[11] Milgram (1974) found that obedience dropped to 21 percent when the experimenter was physically absent (experiment 7). Three other relevant findings from the Milgram studies were that obedience dropped to 48 percent when the reputation of the institution decreased (experiment 10), to an average of 10 percent when the experimenter's status was decreased (experiments 15 and 13), and to 10 percent when two peers disobeyed (experiment 17).

H_2: The request to make an equal allocation of effort decreases the positive relation between effort allocated to the imprecisely measured task and the incentive weight on the same task hypothesized in H_1.

This hypothesis implies that when the imprecisely measured task's incentive weight is relatively *small*, such that it does not motivate enough effort to that task, a request to make an equal allocation of effort will be positively related to the amount of effort allocated to the imprecisely measured task. In contrast, when the imprecisely measured task's incentive weight is relatively *large*, such that it motivates too much effort to that task, a request to make an equal allocation of effort will be negatively related to the amount of effort allocated to the imprecisely measured task.

I also investigate the impact that a reasonable and complete explanation—a subdivision of informational justice—has on effort allocations. An informationally just explanation should also be candid, adequate, and timely (Colquitt, 2001). Therefore, I refer to an explanation that is reasonable and complete as being coherent, while an explanation that is not reasonable or complete as being incoherent.

Based on the reasoning from the informational justice literature, I expect that the coherence of the explanation for requesting an equal allocation of effort will be positively related to the employee's obedience to that request. That is, conditional upon a given incentive weighting scheme, I expect that employees' effort allocation decisions will be affected by (1) the supervisor's effort allocation request, (2) the explanation for the request, and (3) by the precision with which the performance measures capture the actual outcome. When the supervisor's request is accompanied with a reasonable and complete explanation, I expect perceptions of informational justice to increase relative to when

only a request is made without an explanation, which will motivate greater compliance with the request. On the other hand, when the request is accompanied with an unreasonable and incomplete explanation, I expect that perceptions of informational justice will decrease relative to when a request is made without an explanation, which will motivate less compliance with the request.

H_3: Explanation coherence moderates the effect of a request such that a coherent explanation will strengthen the effect of a request while an incoherent explanation will weaken the effect of a request.

This hypothesis implies that when the imprecisely measured task's incentive weight is relatively *small*, such that it does not motivate enough effort to that task, a coherent (incoherent) explanation will increase (decrease) the amount of effort allocated to the imprecisely measured task, relative to when only a request is made. In contrast, when the imprecisely measured task's incentive weight is relatively *large*, such that it motivates too much effort to that task, I expect that a coherent (incoherent) explanation will decrease (increase) the amount of effort allocated to the imprecisely measured task, relative to when only a request is made.

These three hypotheses are illustrated in Figures B3 and B4. Figure B3 illustrates these hypotheses using a path diagram, while Figure B4 provides a graphical depiction of the predicted results.

CHAPTER 3

METHOD

3.1 Task and Design

Participants played the role of production managers in LeBaron Company, a fictitious clothing manufacturing company. Participants' job was to allocate their effort between two tasks: a coordination task and a quality task. All participants were given the same instruction about how their effort allocation decisions would influence the bonuses that they earned. The probability of successfully performing either task was proportional to the amount of effort allocated to it. Participants were told that because no one at LeBaron could observe either their effort allocation decisions or the actual outcome on the task, the bonuses were based on imperfect measures of their performance: *Target Date* for the coordination task, and *Returned Purchases* for the quality task. While both performance measures perfectly measured unsuccessful performance, *Target Date* measured success on the coordination task relatively precisely (90% precision) while *Returned Purchases* measured success on the quality task relatively imprecisely (50% precision).

The experiment crossed two sets of bonuses offered by the supervisor with four levels of messages that the supervisors sent to the participants so that there were eight experimental conditions. Both the bonuses and the messages were between-subjects manipulations. To manipulate the bonuses, approximately half of the participants were offered a 250¢ bonus for both tasks (250¢ condition), while the other half of the participants were offered a 250¢ bonus for the coordination task and a 1,250¢ bonus for the quality task (1,250¢ condition).

The size of the bonuses in each condition was based on several factors. First, since recruiting participants depended largely on monetary payment, participants should be compensated in proportion to the opportunity cost of their time. Second, because both tasks are equally important to the firm, offering an equal bonus for both tasks seems to be consistent with much of the Balanced Scorecard philosophy that emphasizes the importance of tasks, and does not emphasize the precision with which tasks are measured. However, making an equal allocation of effort reduces the participants' expected earnings relative to placing a greater proportion of effort on the precisely measured task, and is therefore likely to be an undesirable outcome for participants. While the chance of winning both bonuses is greatest at a 50/50 allocation of effort, the probability of this happening is only 11.25%.[12] Given an exponential utility function,[13] a participant who forgoes a 90% chance of winning 250¢ for a 11.25% chance of winning 500¢ would be very risk loving and would be willing to accept a minimum certain earnings of $7.94 in exchange for a 50/50 win $0/ win $10 gamble.[14]

Third, offering a bonus for the imprecisely measured task that is five times greater than the precisely measured task takes into account the precision of task measurement, and should motivate even the most risk averse participants to allocate a large proportion of effort to the imprecisely measured task. Assuming an exponential utility function, a

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[12] An equal allocation of effort means that the chances of earning the bonus for the precisely measured task is equal to 45% (50% * 90%), while the chances of earning the bonus for the imprecisely measured task is equal to 25% (50% * 50%). The chances of winning both bonuses is therefore equal to 11.25% (45% * 25%).

[13] An exponential utility function is defined as $U(\$) = \$^{\gamma}$. Therefore, risk neutral behavior is indicated by $\gamma = 1$, while risk aversive (seeking) behavior is represented by $\gamma < 1$ ($\gamma > 1$).

[14] In the following equation, $.9 * (250)^{\gamma} = .1125 * (500)^{\gamma}$, $\gamma = 3$, indicating risk seeking behavior. Inserting $\gamma = 3$ into in the following equation, $\$^{\gamma} = .5 * (10)^{\gamma}$, yields $\$ = 7.94$.

participant who allocates all effort to the precisely measured task would be very risk averse, and would be willing to accept a minimum certain earnings of $1.50 in exchange for a 50/50 win $0/ win $10 gamble.

The message sent to the participants was manipulated at three levels. Approximately one-fourth of the participants was assigned to the "no message" (NM) condition and did not receive any message from their supervisor. Another fourth of the participants were assigned to the "request only" (RO) condition and received a message from their supervisor telling the participants to "please allocate your effort equally between tasks," but did not provide an explanation as to why an equal allocation of effort was desired. Another fourth of the participants were assigned to the "request and coherent explanation" (RCE) condition and received the same message as in the "request only" condition but were also provided with the following explanation for why an equal allocation of effort was desired:

> Both tasks are equally important for LeBaron Company to continue making profit and being a viable business. Customer satisfaction quickly decreases if 1) our clothing is not on the shelf in a timely manner and 2) our customers do not get their money's worth from our clothing. This means that you need to 1) successfully coordinate activities so that our clothing is on the shelf by the targeted date, and 2) meet the quality standards so that customers are not upset with the quality of their clothing. Successfully performing only one task basically has the same impact on LeBaron Company's profitability as successfully performing neither task, and will quickly lead to LeBaron Company's making losses and possibly even shutting down.

This explanation was intended to parallel key features of a causal map. In particular, this explanation (1) appeals to the overarching goal of the company to continue making profit and being a viable business, (2) provides a reasonable explanation by providing a logical sequence of events regarding how the participants' actions affect

the company's goal, and (3) provides a complete explanation by directing the explanation to the participants' role of production manager, and revealing what will happen if an equal allocation is not made.

The remaining fourth of the participants were assigned to the "request and incoherent explanation" (RIE) condition and received the same message as in the "request only" condition, but were also provided with the following explanation for why an equal allocation of effort was desired:

> There are rumors that some of our shareholders are in financial trouble and want to increase LeBaron's share price. As you know, the price for LeBaron's shares depends on both this year's profit and expectations about long-term profit. The tough part is that while we know that many factors influence this year's profit, it is hard to tell which set of factors is the most important. Nor do I know if maximizing this year's profit will maximize the company's long-term profit. I have no idea if giving all tasks equal priority is the right thing to do. In any case, it all may come down to how the market demand shapes up and nothing we do may matter.

This explanation was intended to leave out key features of a causal map. In particular, this explanation (1) appeals to some troubled shareholders who want to increase the price, rather than appealing to the overarching goal of the company, (2) fails to provide a reasonable explanation by expressing uncertainty about how actions will influence outcomes, and (3) lacks completeness by not directing comments to the participants' role of production manager, nor indicating the consequences of making a non-equal allocation of effort. In addition, the length of this incoherent explanation, 118 words, was intended to be similar in length as the coherent explanation, 120 words, to control for cognitive processing limitations.

A notable feature of the request to make an equal allocation of effort is that it is very unlikely to be the optimal strategy regardless of the participant's risk preference.

Participants' effort allocation decisions can be characterized by the three gambles illustrated in Figure B5. For risk neutral participants, expected utility (profit) is maximized by allocating all effort to the precisely measured task for participants in the 250¢ condition, or to the imprecisely measured task for participants in the 1,250¢ condition.[15]

In either of the bonus conditions, extremely risk averse participants' expected utility is always maximized by allocating all effort to the precisely measured task.[16] As illustrated in Panel A of Figure B5 allocating all effort to the precisely measured task is essentially a two-outcome gamble with a ninety percent probability of earning the precisely measured task's bonus, 250 cents, and a ten percent probability of earning no bonus.

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[15] Participants' expected profit function takes the following form: $(.005 * \alpha * i) + (.009 * (1 - \alpha) * p)$ where α = effort allocated to the imprecisely measured task, i = the bonus for the imprecisely measured task, and p = the bonus for the precisely measured task. The derivative, with respect to α, equals $.005*i - .009p$. Thus, in the 250¢ condition, expected profit is maximized by allocating all effort to the precisely measured task, while every unit of effort allocated to the imprecisely measured task reduces expected profit by one cent. In contrast, in the 1,250¢ condition, expected profit is maximized by allocating all effort to the imprecisely measured task, while every unit of effort allocated to the precisely measured task reduces expected profit by four cents.

[16] As in footnote 14, this statement is based on the assumption that participants have an exponential utility function such that $U(\$) = \$^{\gamma}$. Given such a utility function, the coefficient of risk aversion that is required to maximize expected the expected utility of an effort allocation that places at least one percent of effort on the imprecisely task in the 250¢ condition is found by maximizing the following function with respect to γ: .000545 * (imprecisely measured task bonus, 250¢)$^{\gamma}$ + .886545 * (precisely measured task bonus, 250¢)$^{\gamma}$ + .004455 * (imprecisely measured task bonus + precisely measured task bonus, 500¢)$^{\gamma}$ + .108455 * (no bonus)$^{\gamma}$. (The preceding equation is based on the probabilities indicated in Panel C of Figure B5.) The coefficient of risk aversion, γ, must be at least greater than 1.5 to maximize expected utility. In the 1,250¢ condition, the coefficient of risk aversion that equates the expected utility of allocating all effort to the precisely measured task, .9 * (precisely measured task bonus, 250¢)$^{\gamma}$, to the expected utility of allocating all effort to the imprecisely measured task, .5 * (imprecisely measured task bonus, 1,250¢)$^{\gamma}$, is approximately 0.365, implying that a person would have to be fairly risk averse to prefer allocating all effort to the precisely measured task, rather than allocating all effort to the imprecisely measured task in the 1,250¢ condition.

In the 1,250¢ condition, moderately risk averse participants' expected utility is maximized by allocating all effort to the imprecisely measured task.[17] Referring to Panel B of Figure B5, allocating all effort to the imprecisely measured task is also a two-outcome gamble with a fifty percent probability of earning the imprecisely measured task's bonus, either 250 cents or 1,250 cents depending on the bonus condition, and a fifty percent chance of earning no bonus.

In either of the bonus conditions, any allocation that places a positive amount of effort on both tasks increases the probability of earning both bonuses, but also increases the variation in expected earnings. Such allocations are essentially four-outcome gambles with varying probabilities of earning no bonus; the precisely measured task's bonus, 250 cents; the imprecisely measured task's bonus, 250/1,250 cents; or both bonuses 500/1,500 cents as illustrated in Panel C of Figure B5. Such gambles are only optimal for participants who are relatively risk seeking. While an equal allocation of effort maximizes the probability of earning both bonuses, such an allocation is only optimal for extremely risk seeking participants.[18]

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[17] Similar calculations as in footnote 16, but for the 1,250¢ condition, imply that the coefficient of risk aversion, γ, must be at least equal to 4.1 for an effort allocation that places at least one percent of effort on the precisely measured task to maximize utility.

[18] As in footnote 14, this statement is based on the assumption that participants have an exponential utility function such that $U(\$) = \$^{\gamma}$. Given such a utility function, the coefficient of risk aversion that is required to maximize expected the expected utility of an equal allocation of effort is found by maximizing the following function with respect to γ: $.1375 * (\text{imprecisely measured task bonus})^{\gamma} + .3375 * (\text{precisely measured task bonus})^{\gamma} + .1125 * (\text{imprecisely measured task bonus} + \text{precisely measured task bonus})^{\gamma}$. For any incentive weighting used in this experiment, the coefficient of risk aversion, γ, must be at least greater than six for an equal allocation of effort to maximize expected utility. This translates into a willingness to accept a minimum certain earnings of $8.91 in exchange for a gamble with a 50/50 win $0/ win $10 gamble.

3.2 Procedure

Upon arrival, participants were assigned to a computer terminal that was surrounded by dividers so that each participant could only see his/her own monitor. After reading an informed consent document, participants were informed that they would be asked to play the role of an employee in a large manufacturing company and that they could earn money, in addition to the $5 participation fee, based on their decisions, and would be paid in cash before leaving. Participants then proceeded through the task at their own pace. The task consisted of four sections: 1) training on the task, 2) between five and fifteen practice sessions, 3) two work sessions, and 4) follow up questions.[19]

1. The training consisted of two parts: background information, and a simulation.
    a) Participants were told that they had just been hired as the production manager for LeBaron Company, and were provided with background information about the company. As a production manager he/she would be responsible for coordinating production activities with the purchasing and sales departments and ensuring that their products met the quality standards. Participants were then instructed that they would have to decide how to allocate their effort between the two tasks. Nobody at LeBaron Company would ever learn their effort allocation decisions, but their decisions would influence LeBaron

[19] Screenshots of the task are included in Appendix C.

Company's profit[20] as well as their own bonus. While allocating 100% of effort to one task would guarantee success on that task, it would also guarantee a low level of performance on the other task. Because effort and performance were not observable by the company, the Target Date and Returned Purchases performance measures would be used to evaluate participants' performance. Also, their supervisors would choose how much of a bonus the participants would receive if those performance measures indicate success on a task. While the performance measures would not always indicate successful performance, they would perfectly measure unsuccessful performance.

b) After receiving the background information, participants were guided through the effort allocation simulation presented in Figure B6. Participants were presented with the table in Figure B6, one row at a time, and were also provided with step-by-step instructions about the meaning of each row in the table. After proceeding through the table in Figure B6, participants were asked to remove a summary sheet from their folder and were required to correctly answer eight questions to ensure that they correctly understood the task before proceeding to the practice sessions.

2. During each practice session, participants made an effort allocation decision after learning a randomly determined bonus (ranging between 0¢ and

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[20] Because I did not want participants to be affected by how fairly earnings were distributed between the company and themselves, participants were not provided with specific quantitative information regarding the effect of their effort allocation decisions on company profit.

1,000¢) and precision (ranging between 0% and 100%) associated with each performance measure. Participants had to complete at least five practice sessions, and no more than fifteen practice sessions, before proceeding to the work sessions. On average participants completed nine practice sessions before proceeding to the work sessions.

The goal of the practice sessions was to give participants experience with various combinations of bonuses and performance measure precisions so that they would have a good idea of how they could maximize their payoffs in the work sessions. Evidence from the practice sessions suggests that participants formed a strategy that is consistent with economic theory. Table A1 shows the results of regressing effort allocated to the coordination task on the bonus for each task and the precision of each task during the practice sessions. The positive coefficients on the coordination task's bonus and precision indicate that participants allocated more effort to the coordination task as its bonus and the precision increased. In contrast, the negative coefficients on the quality task's bonus and precision indicate that participants allocated more effort to the quality task as its bonus and precision increased.

3. After completing the practice sessions, participants then proceeded to the two work sessions. Before completing the work sessions, participants were informed that the precision of Target Date was 90%, while the precision of Returned Purchases was 50%. Participants were also informed that their supervisor knew the performance measure precisions. Before each work session, participants learned the bonuses chosen by their supervisors, whether

or not their supervisor had decided to send them a message, and the contents of the message.

After the first work session, participants were informed that their supervisor for the first work session retired and they would have a new supervisor for the second work session. The supervisor for the second work session always chose the same bonuses as the supervisor for the first work session. In the first work session, all participants were told that their supervisor did not send a message. Message was manipulated only during the second work session for two reasons: 1) so that differences in risk preferences among treatments could either be ruled out as a competing explanation, or controlled for in the event that one condition was made up of a group of participants that were relatively more/less risk averse than the other conditions, and 2) to increase the salience of the effect of a message for the participants in the RO, RCE, and RIE conditions. The drawback to this is that participants' earnings in the first work session may influence their decisions in the second work session. I attempt to reduce this concern in the analyses that follow.

4. After completing the two work sessions, participants answered follow-up questions to ensure that the manipulation was successful, provide an explanation for their effort allocation decision, and to provide demographic information. Finally, participants filled out a receipt, received cash payment, and were excused.

3.3 Participants

The main results are based on data gathered from 154 students from the University of Iowa that participated in this experiment. The mean/median age of participants is 21 years. Approximately one third of the participants are female. On average, participants spent 23 minutes completing the task.

3.4 Measures

The amount of effort allocated to the imprecisely measured task during the second work session (*IMT Effort 2*) is used as the primary dependent variable.

I tested participants' perceptions of the message manipulation using four questions. The first question was a yes/no question that asked if the participants' supervisor for the second work session sent them a message. Five of the participants answered this question incorrectly. The second question asked if the participants' supervisor for the second work session told them how he/she wanted them to allocate effort. Five participants answered this question incorrectly, two of which also answered the first question incorrectly.

The third (fourth) question asked to what extent the participants' supervisor for the second work session provided a reasonable (complete) explanation about why an equal allocation of effort was desired.[21] Participants could either answer, "did not send a message", or on a scale of one (not at all) to six (to a large extent). The correlation between these two questions is significantly positive, (Pearson correlation = .90, p <

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[21] These questions are adapted from Colquitt's (2001) Informational Justice measurement scale.

.0001, Spearman correlation = .93, $p < .0001$). Based on an average of these two scores, participants in the "request and coherent explanation" condition perceived the explanation to be the most reasonable and complete (mean = 4.60, S.D. = 1.08), subjects in the "request and incoherent explanation" condition perceived them to be moderately reasonable and complete (mean = 3.09, S.D. = 1.24), while subjects in the "request only" condition perceived them to be not at all reasonable and complete (mean = 1.05, S.D. = 0.35).[22] Two people incorrectly answered one or both of these questions. One person in the "request only" condition incorrectly answered both of these questions by indicating that the supervisor did not send a message. One person in the "no message" condition indicated that the explanation sent by the supervisor for work session two was moderately reasonable.

In all, nine people incorrectly answered one or more manipulation check questions. Two of these people were eliminated from the rest of the analyses because they missed at least two of the four manipulation-check questions. I include the remaining eight people in the analyses who only answered one question incorrectly because it appears that they may have just misread one of the questions, and not disregarded the manipulation. Nonetheless, excluding these seven people does not substantively change the results.

I describe all other variables in the tables and sections in which they are used. Table A2 provides descriptive statistics for all variables aggregated over all experimental conditions, and Table A3 presents the correlation matrix for all variables.

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[22] Independent t-tests indicate that all three of these means are significantly different from one another.

CHAPTER 4

RESULTS

4.1 Descriptive Statistics

Table A5 provides descriptive statistics on the amount of effort allocated to the imprecisely measured task during the second work session (*IMT Effort 2*) by experimental condition. Cell means of *IMT Effort 2*, corresponding to Table A5, are depicted graphically in Figure B7. This figure indicates at least partial support for the hypotheses. First, increasing the size of the bonus on the imprecisely measured task increases the mean quantity of effort allocated to that task, creating upward sloping lines. Second, sending a message that requests an equal allocation of effort to participants moves effort allocations closer to the desired 50/50 level, regardless of explanation quality or presence, decreasing the slope of the lines. Third, the slope of the "request and incoherent explanation" line is steeper than the "request only" and the "request and coherent explanation" lines. One other surprising result is highlighted in Figure B7: the more than expected willingness of participants to comply with the request in the "request only" condition. Statistical tests of the hypothesized effects are presented next.

4.2 Hypothesis Tests

The predicted effects depicted in the path diagram on Figure B3 can be tested within the framework of the regression model presented below.

$$\begin{aligned} \textit{IMT Effort 2} = {} & \alpha + \beta_1 \textit{Bonus} + \beta_2 \textit{Request} + \beta_3 \textit{Coherent Explanation} + \beta_4 \textit{Incoherent Explanation} + \\ & \beta_5 \textit{Bonus*Request} + \beta_6 \textit{Bonus* Coherent Explanation} + \beta_7 \textit{Bonus* Incoherent} \\ & \textit{Explanation} + \varepsilon \end{aligned} \qquad (1)$$

where:

IMT Effort 2	=	the amount of effort allocated to the imprecisely measured task during the second work session,
Bonus	=	0 for participants that were offered a bonus of 250¢ for the imprecisely measured task, or 1 for participants that were offered a Bonus of 1,250¢ for the imprecisely measured task,
Request	=	0 for participants that did not receive a message from their supervisor (NM condition), or 1 for participants that received a message asking them to make an equal allocation of effort (RO, RCE, and RIE conditions),
Coherent Explanation	=	0 for participants that did not receive a coherent explanation for making an equal allocation of effort, or 1 for participants that received a coherent explanation for making an equal allocation of effort, and
Incoherent Explanation	=	0 for participants that did not receive an incoherent explanation for making an equal allocation of effort, or 1 for participants that

received an incoherent explanation for making an equal allocation of effort.

The correspondence between the coefficients in this regression model and the cell means is presented in Table A6. I chose to use this regression model because my third hypothesis predicts the effect of explanation quality relative to when no explanation is given for a request. The results of this regression are reported in the second to last column of Tables A7 and A8.

The first hypothesis predicts that when the participants do not know the congruent allocation of effort, the incentive weight placed on the imprecisely measured task is positively related to the effort allocated to that task. H_1 would be supported by a significantly positive coefficient on the *Bonus* term (β_1), indicating that more effort was allocated to the imprecisely measured task in the 1,250¢/NM condition than in the 250¢/NM condition. Referring to the second to last column of Table A7, the coefficient on *Bonus*, 31.79, is significantly positive ($t_{144} = 5.08$, 1-tail $p < .01$). Therefore, offering a larger bonus for the imprecisely measured task increases the amount of effort allocated to that task indicating strong support for H_1. As noted earlier, this reinforces the existing analytic literature.

H_2 predicts that a request to make an equal allocation of effort will reduce the positive relation between the incentive weight placed on the imprecisely measured task and the amount of effort allocated to that task. H_2 would be supported by a significantly negative coefficient on the *Bonus*Request* term (β_5). Referring to the second to last column of Table A7, the coefficient on *Bonus*Request*, -28.23, is negative and statistically significant ($t_{144} = -3.17$, 1-tail $p < .01$) indicating a reduction in the incentive

weight-effort allocation relation relative to when the supervisor does not send a message. Further analysis indicates that this decreased relation results from participants exhibiting more obedience to the supervisor's request in both incentive conditions. Referring to the second to last column of Table A7, the coefficient on the *Request* term, 15.23, is positive and statistically significant (t_{144} = 2.43, 1-sided p = .01) indicating that participants in the 250¢/RO condition reliably allocate more effort to the imprecisely measured task than participants in the 250¢/NM condition. Similarly, referring to the second to last column of Table A8, the sum of coefficients on the *Request* and *Bonus*Request* terms, -13.00, is negative and statistically significant (t_{144} = 2.05, 1-sided p = .02) indicating that participants in the 1,250¢/RO condition reliably allocate less effort to the imprecisely measured task than participants in the 1,250¢/NM condition. Thus, the results strongly support H_2.

H_3 predicts that explanation quality moderates the impact of a request on the incentive weight-effort allocation relation. Specifically, H_3 predicts that a coherent explanation magnifies the negative effect of a request that is predicted in H_2, while an incoherent explanation weakens it. H_3 would be fully supported by a significantly negative coefficient on the *Bonus*Coherent Explanation* term (β_6), and a significantly positive coefficient on the *Bonus*Incoherent Explanation* term (β_7).

Referring to the second to last column of Table A7, the coefficient on *Bonus*Coherent Explanation*, 7.99, is positive, rather than negative, and statistically insignificant (t_{144} = 0.91, 1-tail p = .82), indicating that the coherent explanation does not incrementally impact the incentive weight-effort allocation relation relative to when only a request is given. Surprisingly, the results indicate that merely providing a request to

make an equal allocation of effort appears to completely remove the incentive weight-effort allocation relation. Referring to the second to last column of Table A8, the sum of coefficients on the *Bonus* and *Bonus*Request* terms, 3.56, is positive, but statistically insignificant from zero (t_{144} = 0.56, 1-sided p = .29) leaving no room for a reasonable and complete explanation to further reduce the incentive weight-effort allocation relation. Thus, the results fail to support the prediction that a coherent explanation strengthens the negative impact of a request on the incentive weight-effort allocation relation.

Referring to the second to last column of Table A7, the coefficient on *Bonus*Incoherent Explanation*, 18.44, is positive and statistically significant (t_{144} = 2.11, 1-sided p = .02), indicating that the incentive weight-effort allocation relation is stronger when participants receive an incoherent explanation relative to when they receive no explanation. Further analysis indicates that this increase in the incentive weight-effort allocation relation results mostly from participants exhibiting less obedience to the supervisor's request in the 1,250¢ incentive condition. Referring to the second to last column of Table A7, the coefficient on the *Incoherent Explanation* term, -6.14, is negative but statistically insignificant (t_{144} = -0.99, 1-sided p = .16) indicating that obedience does not reliably decrease in the 250¢ condition when a request is supplemented with an incoherent explanation. In contrast, referring to the second to last column of Table A8, the sum of coefficients on the *Incoherent Explanation* and *Bonus*Incoherent Explanation* terms, 12.31, is positive and statistically significant (t_{144} = 1.99, 1-sided p = .02) indicating that obedience reliably decreases in the 1,250¢ condition when a request is supplemented with an incoherent explanation. Also, referring to Table A8, the sum of coefficients on the *Request*, *Incoherent Explanation*, *Bonus*Request*, and

*Bonus*Incoherent Explanation* terms, -.69, is statistically insignificant (t_{144} = -0.11, 1-sided p = .46) indicating that the mean level of *IMT Effort 2* in the RIE/1,250¢ condition is not reliably different from that in the NM/1,250¢ condition. Thus, the results support the notion that an incoherent explanation weakens the negative impact of a request on the incentive weight-effort allocation relation. In sum, the results provide partial support for H_3.

4.3 Robustness Checks

4.3.1 Controlling for Risk Preferences

One explanation for the observed results may be that participants in the RO and RCE conditions prefer, on average, to allocate their effort between tasks more equally than participants in the NM and RIE conditions in the first place. In this section I investigate whether such a difference could arise because of variations in risk preferences.

The range of effort allocated to the imprecisely measured task during the second work session, as depicted in Figure B8, suggests that the risk preferences of participants vary widely. Referring to the no message conditions, it appears that an equal allocation of effort was not a natural focal point for participants in either bonus condition.[23] However, it could be the case that this distribution of risk preferences is not the same in all message conditions.

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[23] It is also interesting to note that modal allocation decisions are at the 40 and 70 levels in the 250¢ and the 1,250¢ conditions, respectively. A likely explanation for this behavior is that participants wanted to allow for the possibility of earning both bonuses without drastically reducing their chances for earning either the most certain, or largest bonus.

4.3.1.1 Including the Effort Allocation Decision From the First Work Session as a Control Variable

One way to control for differences in risk preferences among the three message conditions is to incorporate the allocation decision during the first work session into the statistical analyses. Descriptive statistics on the amount of effort allocated to the imprecisely measured task for the first work session (*IMT Effort* 1) are presented in Table A9. Cell means of *IMT Effort 1*, corresponding to Table A9, are depicted graphically in Figure B9, and the distribution of allocation decisions are displayed in Figure B10. A visual inspection of the means and distribution of allocation decisions indicates some variation in allocation preferences among the eight experimental conditions. In particular, the mean and median *IMT Effort 1* in the RIE/1,250¢ condition is substantially greater than any other of the 1250¢ conditions, which could provide an alternative explanation for why the observed slope of *IMT Effort 2* is greater for the RIE condition than the RO condition. Statistical results based on a regression similar to regression (1), in which *IMT Effort 1* is the dependent variable, are presented in Tables A10 and A11. Table A10 indicates that the coefficient on *Bonus*, 21.13, is statistically significant, (t_{144} = 2.86, 1-sided $p < .01$) providing further support for H_1. Tables A10 and A11 indicate that none of the pairwise comparisons within the 250¢ or the 1,250¢ conditions is significantly different from one another at conventional levels of significance, but the difference between the 1,250¢/RIE and the 1,250¢/RO conditions, 11.49, is marginally significant (t_{144} = 1.58, 2-sided $p = .12$). Thus, as an additional control for differences in allocation preferences, I repeat the hypothesis tests after including *IMT Effort 1* in

regression (1).[24] The results of this regression are presented in the last column of Tables A7 and A8. While most of the results of the hypothesis tests are substantially unchanged, the tests of H_3 become less significant. In particular, the t-statistic of the *Bonus*Incoherent Explanation* coefficient decreases from $t_{144} = 2.11$ (1-sided p = .02) to $t_{143} = 1.45$ (1-sided p = .07), and the t-statistic of the sum of coefficients on the *Incoherent Explanation* and *Bonus*Incoherent Explanation* terms decreases from $t_{144} = 1.99$ (1-sided p = .02) to $t_{143} = 1.41$ (1-sided p = .08).

4.3.1.2 Analysis of the Absolute Deviation from an Equal Allocation of Effort

An alternative method to control for difference in risk preferences is to analyze the absolute amount by which the effort allocation decision during the second work session deviated from the requested 50/50 allotment, *Abs. Dev. 2*. The advantage of using this measure is that deviations above the 50/50 level do not cancel out deviations below the 50/50 level when computing the average. While this measure does not allow a test of H_1, it does provide an alternative way for testing H_2 and H_3. Descriptive statistics for *Abs. Dev. 2* are presented in Table A12, and the means for each experimental condition are represented graphically in Figure B11. The pattern of means shown in Figure B11 shows similar results as the pattern of means shown in Figure B7: mean effort allocations are farthest from the requested 50/50 level in the NM conditions, move closer in the RIE and RCE conditions, and are closest in the RO conditions.

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[24] Results from an untabulated ANOVA indicate that the two and three-way interactions of *IMT Effort 1* are insignificant. Therefore, I assume that the average relation between *IMT Effort 1* and *IMT Effort 2* is the same in all experimental conditions, which is why *IMT Effort 1* is not interacted with the other independent variables in regression (1).

The results of a regression analyses on *Abs. Dev. 2*, similar to regression (1), are presented in the second to last column of Tables A13 and A14, and are consistent with the results using *IMT Effort 2*. Notably, the coefficient on the *Request* term, -14.61, is negative and statistically significant (t_{144} = -2.94, 1-tail p < .01), and the coefficient on the sum of the *Request* and *Bonus*Request* terms, -16.11, is also negative and statistically significant (t_{144} = 3.20, 1-tail p < .01) indicating that, regardless of the incentive weight, sending a message that only includes a request to make an equal allocation of effort reliably improves effort allocations relative to when no message is sent. These results are consistent with H_2.

In terms of the absolute deviation from an equal allocation of effort, H_3 implies that the mean levels of *Abs. Dev. 2* in the RCE conditions are less than the means in the RO conditions. However, as previously noted, the mean level of *Abs. Dev. 2* in the RCE conditions is greater than the means in the RO conditions. Referring to the second to last column of Tables A13 and A14, the coefficient on the *Coherent Explanation* term, 4.81, is positive, rather than negative, and insignificant (t_{144} = 0.98, 1-tail p = .16), as is the sum of coefficients on the *Coherent Explanation* and *Bonus*Coherent Explanation* terms ($\beta_3 + \beta_6$ = 2.17, t_{144} = 0.44, 1-sided p = .67) indicating that an coherent explanation does not lead to a reliably different absolute deviation from an equal allocation of effort relative to when a request is made without any explanation.[25]

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[25] In contrast to the *IMT Effort 2* measure, the *Abs. Dev. 2* measure does allow for an adequate explanation to improve effort allocations relative to when no explanation is given. Referring to Table A14, the sum of coefficients on the *Intercept* and *Request* terms, 7.39, is positive and statistically significant (t_{144} = 2.08, 1-sided p = .02), as is the sum of coefficients on the sum of the *Intercept, Bonus, Request,* and *Bonus*Request* terms ($\alpha + \beta_1 + \beta_2 + \beta_5$ = 8.72, t_{144} = 2.45, 1-sided p = .01) indicating that the mean absolute deviation in both RO conditions are significantly different from zero.

H_3 also implies that the mean levels of *Abs. Dev. 2* in the RIE conditions will be greater than the means in the RO conditions. As noted previously, Figure B11 indicates that this is true. However, referring to the second to last column of Table A13, the coefficient on *Incoherent Explanation*, 4.36, is positive, but statistically insignificant (t_{144} = 0.89, 1-sided p = .19) indicating that the mean absolute deviation in the RIE condition is not reliably greater than the mean in the RO condition for the 250¢ incentive condition. However, the sum of the coefficients on the *Incoherent Explanation* and the *Bonus*Incoherent Explanation* terms, 8.93, is significant (t_{144} = 1.82, 1-sided p = .04) indicating that the mean absolute deviation in the RIE condition is reliably greater than the mean in the RO condition for the 1,250¢ condition. These findings are unchanged when the absolute deviation from a 50/50 allocation during the first work session (*Abs. Dev. 1*) is included in the regression model to control for the effect of differing levels of risk aversion among experimental conditions (shown in the last column of Tables A13 and A14). As a whole, the results in this section largely rule out differing risk preferences as an alternative explanation for the main results.

4.3.2 Non-parametric tests of H_3

4.3.2.1 Chi-square tests of obedience

A visual inspection of the distributions in Figure B8 indicates that *IMT Effort 2* is not normally distributed.[26] One non-parametric alternative for investigating H_3 is to

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[26] Relative to a normal distribution, the distribution of all 152 data points is asymmetric (skewness = 0.09 rather than 0) and flatter than a normal (kurtosis = 0.55 rather than 3). Among the experimental conditions, skewness ranges from -1.04 to 0.50, and kurtosis ranges from -0.81 to 4.48.

analyze the number of participants that exactly obeyed the supervisor's allocation request. H_3 implies that the RCE condition should have the highest percentage of participants who obeyed the supervisor's request, followed by the RO condition, and then the RIE condition. Referring to Table A15, the RO condition led to highest level of obedience (63.89%),[27] followed by the RCE condition (51.28%), and then the RIE condition (35%). However, as indicated in Table A16, the only significant difference is between the RO and RIE conditions ($\chi^2_1 = 6.33$, 1-sided p = .01).

Consistent with the analysis of mean *IMT Effort 2* and *Abs. Dev. 2*, Tables A17, A18, A19, and A20 indicate that the overall difference between the RO and RIE conditions is driven largely by the differences in obedience levels in the 1,250¢ condition. While the obedience ranking of the conditions remains unchanged for each bonus condition, none of the pairwise comparisons reported in Table A18 is statistically significant in the 250¢ condition, and only the RO – RIE comparison reported in Table A20 is statistically significant in the 1,250¢ condition ($\chi^2_1 = 5.11$, 1-sided p = .02).

4.3.2.2 Mann-Whitney U Tests

The Mann-Whitney U test, which is based on the rank order of two independent samples of observations, is another non-parametric alternative for testing H_3. All three pairwise comparisons based on *IMT Effort 2* and *Abs. Dev. 2* for all observations, as well as within both incentive conditions are tabulated in Tables A21 through A26. Referring to Tables A21 and A22, the rank order of *Abs. Dev. 2* between the RO and RIE

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[27] Interestingly, this is very close to the percentage of people who obeyed the experimenter, 65 percent, in Milgram's (1974) baseline condition.

conditions is the only pairwise comparison that is statistically significant when I aggregate the observations from both incentive conditions.

Consistent with the main results, there are no significant differences for either dependent variable in the 250¢ conditions, but only in the 1,250¢ conditions. Referring to Tables A25 and A26, the rank order of *Abs. Dev. 2* is significantly different between the RO/1,250¢ and RIE/1,250¢ conditions ($U_{18,20} = 247.0$, 1-tailed $p \approx .03$), and the rank ordering for *IMT Effort 2* is marginally significant ($U_{18,20} = 224.5$, 1-tailed $p \approx .10$).

4.3.3 Comparison of Coherent Explanation to Incoherent Explanation

Before comparing the impact of a coherent explanation to an incoherent explanation, it is worth investigating the effect of explanation quality relative to when no message is sent by the supervisor, rather than just a request. Consistent with H_3, the "request and coherent explanation" significantly weakens the incentive weight-effort allocation relation relative to the "no message" condition ($-\beta_5 - \beta_6 = 20.24$, $t_{144} = 2.32$, 1-sided $p = .01$), while the "request and incoherent explanation" fails to do so ($-\beta_5 - \beta_7 = 9.79$, $t_{144} = 1.13$, 1-sided $p = .13$). Referring to the last column in Table A8, however, indicates that after controlling for the differential risk preferences, the relation between the "request and incoherent explanation" becomes statistically significant ($t_{143} = 1.89$, 1-sided $p = .03$) suggesting that an incoherent explanation also weakens the incentive weight-effort allocation relation relative to when no message is given by the supervisor. This does not necessarily suggest, though, that a coherent explanation has no incremental impact relative to an inherent explanation. To better understand if a coherent explanation

has an incremental impact on effort allocations, relative to an incoherent explanation, I directly compare the impact of a coherent explanation to an incoherent explanation.

Relative to participants in the explanation conditions, participants in the "request only" condition may be less likely to disobey authority because (1) there are fewer statements to argue with, (2) participants may have a smaller chance of being overloaded with information and forgetting the allocation request, (3) participants may have thought of the experimenter, who remained in the room for the whole experiment, as the supervisor, and (4) the presence of an explanation prompts participants to question the supervisor's request and/or think of the supervisor more as a peer, rather than an authority. It seems reasonable that employees often have more contextual information about their supervisor and company strategy than what is given to the participants in this study. Therefore, another interesting question is if participants who receive a coherent explanation are more obedient to the supervisor's request than participants who receive an incoherent explanation.

H_3 implies that the incentive weight-effort allocation relation for the "request and coherent explanation" condition should be weaker than that of the "request and incoherent explanation" condition. Referring back to the second to last column on Table A8, the difference of coefficients on the *Bonus*Coherent Explanation* and *Bonus*Incoherent Explanation* terms, -10.46, is negative but statistically insignificant (t_{144} = -1.22, 1-sided p = .11) indicating that the incentive weight-effort allocation relation is weaker for the "request and coherent explanation" condition than for the "request and incoherent explanation" condition, but not reliably so. Referring again to the second to last column on Table A8, the mean level of *IMT Effort 2* is not significantly

different between the two explanation conditions for the 250¢ incentive weight condition ($\beta_3 - \beta_4$ = -0.32, t_{144} = -0.23, 1 sided p = .37), but is significantly different for the 1,250¢ condition ($\beta_4 + \beta_7 - \beta_3 - \beta_6$ = 12.41, t_{144} = 2.04, 1-sided p = .02). Referring to the last column on Table A8, controlling for *IMT Effort 1* does not substantively alter these results. Therefore, results indicate that relative to a coherent explanation, an incoherent explanation only leads to less compliance to the allocation request when there is a large opportunity cost for obedience.

Though not as significant, results from the regression analyses using *Abs. Dev. 2*, and the non-parametric tests provide corroborating evidence. Referring to Table A14, the difference between the mean level of *Abs. Dev. 2* in the RIE/250¢ and the RCE/250¢ conditions, .45, is statistically insignificant (t_{144} = 0.09, 1-sided p = .46), while the difference between the RIE/1,250¢ and the RCE/1,250¢ conditions, -6.76, is marginally statistically significant (t_{144} = 1.40, 1-sided p = .08). Referring to Tables A17 and A18, the difference between the frequency of people who obey the request in the RIE and the RCE conditions, 10%, is not statistically significant (χ^2_1 = 0.40, 1-sided p = .53) in the 250¢ condition, but the difference between RIE and RCE, 22.63%, is larger, and closer to achieving statistical significance (χ^2_1 = 2.03, 1-sided p = .15) in the 1,250¢ condition. Finally, referring to Tables A23 and A24, the RCE – RIE contrast is insignificant for both *IMT Effort 2* ($U_{20,20}$ = 202.5, 1-sided p ≈ .47) and *Abs. Dev. 2* ($U_{20,20}$ = 206.5, 1-sided p ≈ .43) in the 250¢ condition, but is marginally significant for *IMT Effort 2* ($U_{19,20}$ = 240.0, 1-sided p ≈ .08) and for *Abs. Dev. 2* ($U_{19,20}$ = 237.5, 1-sided p ≈ .09) in the 1,250¢ condition.

4.3.3.1 The Role of Perceived Explanation Coherence

I now investigate if participants' perception of explanation coherence is the psychological mechanism, or mediating variable,[28] that leads participants in the RCE/1,250¢ condition to make more equal effort allocations than participants in the RIE/1,250¢ condition. First I create a measure of perceived explanation coherence (*Perceived EQ*) by conducting a factor analysis on the participants' responses to the two follow-up questions regarding the reasonableness and completeness of the supervisor's explanation.[29] Based on the scree plot and Kaiser criterion, one factor is retained that explains 94 percent of the variance. I then create each participant's *Perceived EQ* score by multiplying the factor weights (.97 for each response) of the retained factor by the standardized transformation of each response.[30]

According to Baron and Kenney's (1986) methodology, four conditions must be satisfied before concluding that participants' perceived explanation quality mediates the explanation quality-effort allocation relation for participants in the 1,250¢ condition. First, regressing *IMT Effort 2* on *Explanation Coherence*, an indicator variable to distinguish between the RCE/1,250¢ condition and the RIE/1,250¢ condition, should result in a significant coefficient, which establishes that there is a relation between the independent and dependent variables. Second, regressing *Perceived EQ* on *Explanation*

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[28] Psychological mechanisms that account for the relation between a predictor and a criterion variable are referred to as mediating variables (Baron & Kenney, 1986, p. 1176).

[29] As noted in footnote 14, these questions are adapted from a subset of Colquitt's (2001) Informational Justice measurement scale.

[30] Results are nearly identical by creating a measure based on the average of the two responses.

Coherence should result in a significant coefficient establishing a relation between the independent variable and the mediating variable. Third, regressing *IMT Effort* 2 on the *Perceived EQ* should result in a significant coefficient establishing a relation between the mediating variable and the dependent variable. Once the relation among all three coefficients has been established, the last step is to regress *IMT Effort 2* on both *Explanation Coherence* and *Perceived EQ*. If the coefficient on *Perceived EQ* remains significant and the coefficient on *Explanation Coherence* becomes insignificant, then the data is consistent with *Perceived EQ* mediating the relation between *Explanation Coherence* and *IMT Effort 2*.

The results of the four regressions of this mediation analysis are displayed in Table A27, and depicted graphically in Figure B12. I include *IMT Effort 1* in all regressions to control for varying levels of risk preference among the participants. Referring to the "Step One" column in Table A27, the standardized coefficient of *Explanation Coherence*, -23, is statistically significant (t_{36} = -1.71, 1-sided p = .05) indicating that participants in the coherent explanation condition allocated less effort to the imprecisely measured task than participants in the incoherent explanation condition.[31] The "Step Two" column in Table A27 indicates that the coefficient on *Explanation Coherence*, .52, is statistically significant (t_{36} = 3.66, 1-sided p < .01) indicating that participants in the coherent explanation condition perceived the explanation to be of higher quality than participants in the incoherent explanation condition. The "Step Three" column of Table A27 indicates that the coefficient on

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[31] Since participants in the inadequate explanation condition allocated, on average, more effort to the imprecisely measured task than what the supervisor requested (see Table A5), a decrease in *IMT Effort 2* is more congruent with the supervisor's request.

Perceived EQ, -.28, is also statistically significant (t_{36} = -2.14, 1-sided p = .02) suggesting that perception of explanation quality is negatively correlated with the amount of effort allocated to the imprecisely measured task for participants in the 1,250¢ condition. Finally, the "Step Four" column of Table A27 indicates that the coefficient on *Explanation Coherence*, -.11, is not significant (t_{36} = -0.73, 1-sided p = .23) and the coefficient on *Perceived EQ*, -.22, is still marginally significant (t_{36} = -1.43, 1-sided p = .08) when *IMT Effort 2* is regressed on both variables. Thus, the data are somewhat consistent with *Perceived EQ* mediating the relation between *Explanation Coherence* and *IMT Effort 2*.[32]

4.3.4 The Cost of Motivating an Equal (Congruent) Allocation of Effort

In theory, the supervisor can motivate an equal allocation of effort using only incentives; however, to do so the supervisor must know the participants' risk preferences and utility functions, which is not a likely assumption. Another way of thinking about the results that have been presented thus far is that a request to make an equal allocation of effort effectively motivates participants to change their risk preferences so that their risk preferences match a given contract. Not only would this reduce the cost of creating contracts that motivate a congruent allocation of effort in practice, but because participants are willing to forgo some expected earnings to comply with the request of their supervisor, it reduces the expected cost of the firm to motivate such effort.

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[32] The results are similar when I repeat the analysis using *IMT Effort 2* (*IMT Effort 1*) rather than *Abs. Dev. 2* (*Abs. Dev.* 1); however, as expected from the results in the previous section, the significance of the coefficient on *Adequate Explanation* in step one less significant (t_{36} = -1.23, 1-sided p = .11).

To investigate if explanations reduced the observed cost of motivating an equal allocation of effort, I analyze the earnings of participants in the second work session. Table A28 presents descriptive statistics on the amount of money participants earned during the second work session. The means for each condition are presented graphically in Figure B13. For participants that received a 250¢ bonus, the average earnings during the second work session are 184¢, 153¢, 250¢, and 150¢ in the NM, RO, RCE, and RIE conditions, respectively. However, referring to results of the regression analysis in Tables A29 and A30, the coefficient on the *Request* term, -31.43, is insignificant (t_{144} = -0.24, 1-tail p = .40), as is the sum of coefficients on the *Request* and *Coherent Explanation* terms ($\beta_2 + \beta_3$ = 65.79, t_{144} = 0.52, 1-tail p = .70), and the sum of coefficients on the *Request* and *Incoherent Explanation* terms ($\beta_2 + \beta_4$ = -34.21, t_{144} = -0.27, 1-tail p = .39) indicating that that when participants are offered the 250¢ bonus for the imprecisely measured task, average earnings for participants in the RO/250¢, RCE/250¢, and RIE/250¢ conditions are not different from the earnings of participants in the NM/250¢ condition. However, because effort allocation was more congruent with the company's goals in the RO/250¢ and RE/250¢ conditions, relative to the NM/250¢ condition, the firm was more profitable.

For participants that received a 1,250¢ bonus, the average earnings during the second work session are 556¢, 181¢, 526¢, and 500¢ in the NM, RO, RCE, and RIE conditions, respectively. Referring to Table A30, the sum of coefficients on the *Request* and *Bonus*Request* terms, -375.00, is negative and significant (t_{144} = 2.86, 1-tail p < .01) indicating that participants in the RO/1,250¢ condition were paid significantly less than participants in the NM/1,250¢ condition. Referring to Table A30 again, the sum of

coefficients on the *Request*, *Bonus*Request*, *Coherent Explanation*, and *Bonus*Coherent Explanation* terms,-29.24, is negative but insignificant (t_{144} = -0.23, 1-tail p = .41), as are the sum of coefficients on the *Request*, *Incoherent Explanation*, *Bonus*Request*, and *Bonus*Incoherent Explanation* terms ($\beta_2 + \beta_4 + \beta_5 + \beta_7$ = -55.56, t_{144} = -0.44, 1-sided p = .33) indicating that participants in the RCE/1,250¢ and RIE/1,250¢ conditions were not paid significantly less than participants in the NM/1,250¢ condition. In sum, the results from this section, combined with the results from the previous sections, provide strong support for an increase in firm profit when monetary incentives are complemented with requests to allocate effort in the desired manner relative to when no such request is made.

4.3.5 The Effect of Incentives and Explanations on the Perceived Justifiability of Bonuses

I also examine the effect of incentives and explanations on the perceived justifiability of the bonuses offered by the supervisor during the second work session. As previously noted, the 1,250¢ bonus on the imprecisely measured task is meant to compensate participants for accepting more risk. Thus, when participants receive no message, no explanation, or an incoherent explanation regarding the request to make an equal allocation of effort, I expect that participants' perceptions of justifiability will be positively influenced by the relative size of the bonus on the imprecisely measured task. In contrast, I expect that a coherent explanation will decrease this relation by increasing the perceived justifiability of bonuses for participants who are offered a 250¢ bonus. To the extent that participants in the 1,250¢ condition perceive the relatively large bonus on the imprecisely measured task as compensation for accepting more risk, I do not expect a

coherent explanation to increase perceptions of bonus justifiability relative to participants in the RCE/250¢ condition, or the other three 1,250¢ conditions.

To investigate if a coherent explanation affects perceptions of bonus justifiability as described in the preceding paragraph, I analyze the participants' responses to the question regarding the justifiability of the task bonuses in the second work session, *Just Bonus 2*. Table A31 presents descriptive statistics on participants' perceptions of bonus justifiability in the second work session, and mean scores are depicted graphically in Figure B14. A visual inspection of means among the eight experimental conditions indicates that, as expected, increasing the size of the bonus on the imprecisely measured task also increases the perceived level of bonus justifiability for the NM, RO, and RIE conditions. Also as expected, a coherent explanation appears to increase perceptions of bonus justifiability for participants in the 250¢ condition, but not in the 1,250¢ condition. Unexpectedly, however, a coherent explanation appears to substantially decrease perceptions of bonus justifiability when moving from the 250¢ condition to the 1,250¢ condition.

I perform a regression analysis similar to regression (1) to evaluate the reliability of these findings. Referring to the second to last column on Tables A32 and A33, the coefficient on the *Bonus* term, 0.46, is positive, but insignificant ($t_{144} = 1.22$, 1-sided p = .11), as are the sum of the terms on the *Bonus* and *Bonus*Request* terms ($\beta_1 + \beta_5 = 0.33$, $t_{144} = 0.88$, 1-sided p = .19) and the *Bonus*, *Bonus*Request*, and *Bonus*Incoherent Explanation* terms ($\beta_1 + \beta_5 + \beta_7 = 0.20$, $t_{144} = 0.56$, 1-sided p = .29) indicating that the size of the bonus does not reliably increase perceptions of bonus justifiability for the NM, RO, and RIE conditions.

The coefficient on the *Coherent Explanation* term, 0.56, is marginally significant (t_{144} = 1.50, 1-sided p = .07), and the sum of coefficients on the *Request* and *Coherent Explanation* terms ($\beta_2 + \beta_3$ = 0.79, t_{144} = 2.16, 1-sided p = .02), and the difference between the coefficient on the *Coherent Explanation* and the *Incoherent Explanation* terms ($\beta_3 - \beta_4$ = 0.70, t_{144} = 1.94, 1-sided p = .03) are both significant indicating that a coherent explanation reliably increases perceptions of bonus justifiability in the 250¢ conditions.

In contrast, the sum of coefficients on the *Request*, *Coherent Explanation*, *Bonus*Request* and *Bonus*Coherent Explanation* terms, -0.14, is statistically insignificant (t_{144} = -0.38, 2-sided p = .71) as is the sum of coefficients on the *Coherent Explanation* and *Bonus*Coherent Explanation* terms ($\beta_3 + \beta_6$ = -0.25, t_{144} = -0.67, 2-sided p = .50) and the sum of coefficients on the on the *Coherent Explanation* and *Bonus*Coherent Explanation* terms less the coefficients on the *Incoherent Explanation* and the *Bonus*Incoherent Explanation* terms ($\beta_3 + \beta_6 - \beta_5 - \beta_7$ = 0.00, t_{144} = 0.07, 2-sided p = .94) indicating that a coherent explanation did not influence perceptions of bonus justification in the 1,250¢ conditions.

The sum of coefficients on the *Bonus*, *Bonus*Request*, and *Bonus*Coherent Explanation* terms, -0.47, is negative, but statistically insignificant (t_{144} = 1.30, 2-sided p = .20) suggesting that a coherent explanation does not reliably reduce the perceived justifiability of bonuses between participants in the RCE/250¢ and the RCE/1,250¢ conditions.

Because participants self-reported their bonus justifiability perceptions after learning how much money they earned during the second work session, there is a

possibility that this measure is also influenced by participants' actual earnings in addition to the expected earnings, explanation, or size of the bonus. Referring to Table A3, the amount of money participants earned during the second work session, *Earnings 2*, is significantly correlated with perceptions of bonus justifiability, *Just 2* (Pearson correlation = .24, 2-sided $p < .01$). To control for this positive effect of earning more money on justifiability ratings, I also analyze the results including *Earnings 2* as a covariate in the analysis. These results are reported in the last column on Tables A32 and A33, and indicate that most of the results are substantively unchanged. The one exception is that the insignificant difference between the RCE/1,250¢ and the RCE/250¢ conditions, -0.47, becomes more negative and marginally significant ($\beta_1 + \beta_5 + \beta_6 = -0.67$, $t_{143} = 1.86$, 2-sided $p = .06$).[33] Thus, after controlling for the effect of actual earnings the data suggest that a coherent explanation decreases perceptions of bonus justifiability. One explanation for this negative effect of bonus size in the RCE condition could be that the coherent explanation caused participants to focus primarily on the importance of each task to the company, and disregard the precision with which the task was measured.

4.3.6 Further Investigation of Allocation Decisions in the "Request Only" Condition

As already noted, participants in the "request only" conditions exhibited a surprisingly high level of obedience to the fictitious supervisor's request. In this section I investigate two potential boundary conditions of obedience to the supervisor's request.

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[33] A rank order comparison of these distributions also indicates that they are marginally significant ($U_{20,19} = 334.5$, 1-sided $p \approx .0873$).

4.3.6.1 Boundary Conditions

One possible alternative explanation for why participants' effort allocations corresponded to the supervisor's request is because an equal allocation of effort is a natural focal point. In addition to obeying the supervisor's request, there are at least three additional reasons why so many participants made an equal allocation of effort. First, because communication is limited to a one-way flow of information from the supervisor to the participant in the form of incentive weights for each task and a single message, there is a substantial void of details regarding the supervisor's motives for requesting an equal allocation of effort. Thus, even if the participants are concerned about moral hazard on the part of the supervisor, an equal allocation may seem like the ethically correct decision because it does not favor either task. Second, an equal allocation of effort is prominent by virtue of its symmetry, and may have been the default allocation for participants that did not understand how to maximize their expected reward. However, referring to participants' allocation decisions in the practice sessions (see Table A1), the first work session (see Table A9), and the second work session for participants in the "no message" condition (see Table A5), the data suggest that participants' at least make allocation decisions that are directionally consistent with profit maximization. Third, while an equal allocation of effort is not profit maximizing from the participants' point of view, such an allocation maximizes the possibility of earning both bonuses, and may therefore maximize the expected utility for extremely risk seeking participants.[34]

[34] See footnote 18.

Accordingly, the first boundary condition I investigate is if obedience to the supervisor's request decreases when the supervisor requests a non-equal allocation of effort.

A second alternative explanation for why participants' effort allocations corresponded to the supervisor's request is because the expected opportunity cost was economically insignificant to many participants. For instance, as already noted in the test of the third hypothesis, participants in the "request and incoherent explanation" (RIE) condition were less obedient than participants in the "request only" (RO) and "request and coherent explanation" (RCE) conditions only when a 1,250¢ bonus was offered for the imprecisely measured task. I conjecture that this is because the expected opportunity cost of obeying the supervisor's request in the 250¢ condition, 50¢,[35] is much less than the expected opportunity cost in the 1,250¢ condition, 200¢.[36] Following this line of reasoning, the second boundary condition I investigate is if obedience decreases as the expected monetary cost of obedience increases.

4.3.6.2 Method

To investigate these potential boundary conditions, I extend the experiment in two ways. First, I modify the RO/1,250¢ and the RCE/1,250¢ conditions so that the supervisor requests participants to allocate only 10 percent of their effort to the

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[35] For participants in the 250¢ condition, expected profit equals (.009 * 250 * α) + (.005 * 250 * (1 – α)), where α = the amount of effort allocated to the precisely measured task. Thus, the expected foregone profit for making an equal allocation of effort, relative to allocating all effort to the precisely measured task, is equal to the slope of this function, 1, multiplied by the difference in effort, 50.

[36] For participants in the 1,250¢ condition, expected profit equals (.009 * 250 * α) + (.005 * 1,250 * (1 – α)), where α = the amount of effort allocated to the precisely measured task. Thus, the expected foregone profit for making an equal allocation of effort, relative to allocating all effort to the imprecisely measured task, is equal to the slope of this function, 4, multiplied by the difference in effort, 50.

imprecisely measured task. I chose this extension for two reasons. First, based on effort allocation decisions from the original experimental conditions, a 10 percent of effort to the imprecisely measured task did not appear to be a natural focal point.[37] Second, I wanted to make obedience to the supervisor's request as unattractive as possible to evaluate if obedience in the "request only" condition would decrease relative to the "request and coherent explanation" condition. A 10 percent allocation increases the expected opportunity cost from 200¢ to 360¢.[38] Additionally, for any risk preference, allocating 10 percent of effort to the imprecisely measured task is always suboptimal.

I chose not to create an RIE/1,250¢/10% condition because the hypothesis tests of H_3 indicate that participants in the RIE/1,250¢/50% condition allocated a significantly greater amount of effort to the imprecisely measured task than participants in the RCE/1,250¢/50% and the RO/1,250¢/50% conditions, and I expected that same pattern to persist in the 10 percent conditions when the opportunity cost is even greater. In contrast, I chose to extend the 10 percent request to participants in both the RCE/1,250¢/50% and the RO/1,250¢/50% conditions to find out, as predicted in H_3, if a coherent explanation for an allocation request increases performance relative to no explanation. Participants in the RCE/1,250¢/10% condition received the following message from their supervisor:

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[37] Of the 75 participants in the original 1,250¢ conditions, only one person allocated 10 percent of their effort to the imprecisely measure task during the first (and second) work session, compared to 10 people who allocated their effort equally in the first work session.

[38] For participants in the RO/1,250¢/10% and the RCE/1,250¢/10% conditions, expected profit equals $(.009 * 250 * \alpha) + (.005 * 1{,}250 * (1 - \alpha))$, where α = the amount of effort allocated to the precisely measured task. Thus, the expected foregone profit for making an equal allocation of effort, relative to allocating all effort to the imprecisely measured task, is equal to the slope of this function, 4, multiplied by the difference in effort, 90.

> Please allocate 90 percent of your effort to the coordination task. The coordination task is most important for LeBaron Company to continue making profit and being a viable business. Customer satisfaction only slightly decreases if our customers do not get their money's worth from our clothing, but customer satisfaction quickly decreases if our clothing is not on the shelf in a timely manner. This means that it is only mildly important to meet the quality standards, but it is extremely important to successfully coordinate activities so that our clothing is on the shelf by the targeted date and customers are not upset with the variety of products offered. Failure to allocate effort in the desired manner will quickly lead to LeBaron Company's making losses and possibly even shutting down.

Based on the results of the above mentioned extension, I perform a second extension to further investigate if increasing the expected monetary cost for obeying the supervisor causes a decrease in the rate of obedience for participants in the "request only" condition. Accordingly, I increase the bonus on the imprecisely measured task from 1,250¢ in the RO/1,250¢/10% condition to 2,500¢, which increases the opportunity cost of obeying the supervisor's request from 360¢ to 922.5¢.[39] Because this is a costly extension, the sample size is relatively small. The results from both of these extensions are discussed in the next section.

4.3.6.3 Participants

The results for this second experiment are gathered from 51 students from the University of Iowa, who did not participate in the original experiment. The mean/median age of participants is 21 years. Approximately 45 percent of the participants are female. On average, participants spent 24 minutes completing the task.

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[39] For participants in the RO/2,500¢/10% condition, expected profit equals (.009 * 250 * α) + (.005 * 2,500 * (1 – α)), where α = the amount of effort allocated to the precisely measured task. Thus, the expected foregone profit for making an equal allocation of effort, relative to allocating all effort to the imprecisely measured task is equal to the slope of this function, 10.25, multiplied by the difference in effort, 90.

4.3.6.4 Results

4.3.6.4.1 Descriptive Statistics

Table A34 presents descriptive statistics for all variables aggregated over all experimental conditions, and Table A35 presents the correlation matrix for these variables. Because *IMT Effort 2* is so highly correlated with *Abs. Dev. 2*, I do not perform any tests on *Abs. Dev. 2* because the results are nearly identical.[40]

To investigate if a coherent explanation increases obedience to the supervisor's request relative to no explanation for when the supervisor makes a request that is more costly, and is not a natural focal point, I analyze *IMT Effort 2* for the 10 percent conditions. Table A36 reports descriptive statistics for *IMT Effort 2* for each of the three 10 percent conditions. Referring to Table A36, the mean level of *IMT Effort 2* in the RO/1,250¢/10%, 26.33, is only slightly greater than the mean level of *IMT Effort 2* in the RCE/1,250¢/10% condition, 25.67, but substantially less than the mean level of *IMT Effort 2* in the RO/2,500¢/10% condition, 37.78.

4.3.6.4.2 Statistical Test of Means

I test if these means are significantly different from one another, within the framework of the regression model presented below.

$$IMT\ Effort\ 2 = \alpha + \beta_1 Bonus + \beta_2 Coherent\ Explanation + \varepsilon \qquad (2)$$

where:

[40] *IMT Effort 2* is not perfectly correlated with *Abs. Dev. 2* because one person allocated eight percent of their effort to the imprecisely measured task during the second work session.

IMT Effort 2	=	the amount of effort allocated to the imprecisely measured task during the second work session,
Bonus	=	0 for participants that were offered a bonus of 1,250¢ for the imprecisely measured task, or 1 for participants that were offered a Bonus of 2,500¢ for the imprecisely measured task,
Coherent Explanation	=	0 for participants that did not receive a coherent explanation for making an equal allocation of effort, or 1 for participants that received a coherent explanation for making an equal allocation of effort.

The correspondence between the coefficients in this regression model and the cell means is presented in Table A37.

Referring to second to last column on Table A38, the coefficient on the *Coherent Explanation* term, -.67, is negative, but statistically insignificant (t_{48} = -0.07, 1-sided p = .47), which is consistent with the results in the 50 percent conditions, and indicates that a coherent explanation does not lead to more obedience than when no explanation is present. Similarly, the coefficient on the *Bonus* term, 11.44, is positive, but statistically insignificant (t_{48} = 0.94, 1-sided p = .18) indicating that even after increasing the opportunity cost by more than 250%, the level of obedience for participants in the "request only" condition does not change.

To ensure that these results are not affected by differing risk preferences I control for allocation decisions during the first work session, *IMT Effort 1*. Table A39 reports descriptive statistics on *IMT Effort 1* and the distribution of *IMT Effort 1* is displayed on

Figure B15. Referring to Table A41, the mean levels of *IMT Effort 1* are 62.43, 54.57, and 75.67 for the RO/1,250¢/10%, the RCE/1,250¢/10%, and the RO/2,500¢/10% conditions, respectively. However, referring to the results from a regression analysis in Table A40, the coefficient on the *Coherent Explanation* term, -7.86, is not statistically significant (t_{48} = -0.97, 2-sided p = .34), nor is the coefficient on the *Bonus* term (β_1 = 13.24, t_{48} = 1.27, 1-sided p = .11) indicating that the mean level of *IMT Effort 1* in the RO/1,250¢/10% condition is not significantly different from those in the RCE/1,250¢/10%, or the RO/2,500¢/10% conditions. Correspondingly, when I include IMT Effort 1 in regression (2) I find that the results are substantively unchanged (see the last column on Table A38).

4.3.6.4.3 Non-parametric tests

Corresponding to the analysis of results for the hypothesis tests in Section 2, I control for the skewed distribution of *IMT Effort 2* in the 10 percent conditions (see Figure B16) by conducting χ^2 and Mann-Whitney U tests. Referring to Table A41, the percentage of people who obeyed the supervisors request in the RO/1,250¢/10% condition, 57.14, is greater than the percentage of people who obeyed the supervisor's request in the RCE/1,250¢/10% condition, 47.62. While this result is in the opposite direction of the mean levels of *IMT Effort 2*, referring to Table A42, these differences are not statistically significant (χ^2_1 = 0.38, 1-sided p = .54), which is substantively consistent with the analysis of mean *IMT Effort 2*. Similarly, a rank order comparison of distributions between these two conditions indicates statistical insignificance ($U_{21,21}$ = 454.00, 1-tailed p ≈ .48).

Table A43 indicates that the percentage of people who obeyed the supervisor's request in the RO/2,500¢/10% condition, 66.67, is greater than the percentage of people who obeyed the supervisor's request in the RO/1,250¢/10% condition, 57.14%. Once again, while this result is in the opposite direction of the mean levels of *IMT Effort 2*, Table A44 indicates that these differences are statistically insignificant ($\chi^2_1 = 0.24$, 1-sided p = .63), which is substantively consistent with the analysis of mean *IMT Effort2*. Similarly, a rank order comparison of distribution between these two conditions indicates statistical insignificance ($U_{21,9} = 141.00$, 1-tailed $p \approx .48$).

Also of interest is that the percentage of obedience between the 10 percent conditions and the 50 percent conditions is relatively stable. Referring to Tables A45 and A46, the percentage of people in the "request only" conditions who obeyed the supervisor's request to allocate 10 percent of their effort to the imprecisely measured task, 60.00, is nearly equal to the percentage of people who obeyed the supervisor's request to make an equal allocation of effort, 63.89, and statistically insignificant ($\chi^2_1 = 0.11$, 1-sided p = .75). Similarly, referring to Tables A47 and A48, the percentage of people in the "request and coherent explanation" conditions who obeyed the supervisor's request to allocated 10 percent of their effort to the imprecisely measured task, 47.62, is nearly equal to the percentage of people who obeyed the supervisor's request to make an equal allocation of effort, 51.28, and statistically insignificant ($\chi^2_1 = 0.07$, 1-sided p = .79).

4.3.6.4.4 The Cost of Motivating a Congruent Allocation of Effort

To find out if a coherent explanation reduced the cost of motivating an effort allocation that is congruent with the supervisor's request, I analyze the amount of money participants earned during the second work session, *Earnings 2*.

Referring to Table A49, during the second work session participants earned, on average, 261.9¢, 369.05¢, and 638.89¢ in the RO/1,250¢/10%, RCE/1,250¢/10%, and RO/2,500¢/10% conditions, respectively. Referring to Table A50, the coefficient on the *Coherent Explanation* term, 107.14, is statistically insignificant ($t_{48} = 0.62$, 1-sided p = .73) indicating that the amount of money earned in the RCE/1,250¢/10% condition is not reliably greater than the amount of money earned in the RO/1,250¢/10% condition. The coefficient on the *Bonus* term, 376.98, is statistically significant ($t_{48} = 1.70$, 1-sided p = .05) indicating that the amount of money earned in the RO/2,500¢/10% condition is reliably greater than the amount of money earned in the RO/1,250¢/10% condition, which is consistent with the coefficient on the *Bonus* term reported in Table A29 and summarized in Section 4.

4.3.6.4.5 The Effect of Incentives, Allocation Requests, and Explanation Provision on the Perceived Justifiability of Bonuses

I investigate how incentive levels, allocation requests, and explanation presence influence the supervisor's request by analyzing *Just Bonus 2*. Table A51 presents descriptive statistics for *Just Bonus 2* for each of the three 10 percent conditions. The mean level of *Just Bonus 2* in the RO/1,250¢/10% condition, 2.24, is slightly less than that in the RCE/1,250¢/10% condition, 2.38, and much greater than that in the

RO/2,500¢/10% condition, 1.56. In addition, comparing Table A51 to Table A31, the mean levels of *Just Bonus 2* are lower in the 10 percent condition than in the 50 percent condition. I investigate if these differences are statistically significant within the regression model below.

$$Just\ Bonus\ 2 = \alpha + \beta_1\, Coherent\ Explanation + \beta_2\, Effort\ Request + \beta_3\, Effort\ Request{*}Coherent\ Explanation + \beta_4\, Bonus + \varepsilon$$

where:

Just Bonus 2	=	the participant's response regarding the justifiability of the bonuses offered during the second work session,
Coherent Explanation	=	0 for participants that did not receive a coherent explanation for making an equal allocation of effort, or 1 for participants that received a coherent explanation for making an equal allocation of effort.
Effort Request	=	0 if the supervisor asked participants to allocate 10 percent of their effort to the imprecisely measured task; 1 if the supervisor asked participants to make an equal allocation of effort, and
Bonus	=	0 for participants that were offered a bonus of 1,250¢ for the imprecisely measured task, or 1 for participants that were offered a Bonus of 2,500¢ for the imprecisely measured task.

The correspondence between the coefficients in this regression model and the cell means is presented in Table A52. Referring to Tables A53 and A54, none of the

coefficients or sum of coefficients is statistically significant indicating that none of the above mentioned comparisons of *Just Bonus 2* are reliably different from one another.

CHAPTER 5

SUMMARY AND CONCLUSIONS

In this study I investigate the effect of explanations and monetary incentives on effort allocation decisions in a multi-action, multi-measure setting. I find that participants respond to monetary incentives as predicted by economic theory, but participants are also influenced by non-monetary incentives. Specifically, when asked by a supervisor to forgo a large amount of expected personal earnings by allocating effort in a certain way, participants obey the request when the supervisor either provides a reasonable and complete explanation for doing so, or fails to provide an explanation, but not when the supervisor provides an unreasonable and incomplete explanation. Surprisingly, a reasonable and complete explanation for making an equal allocation of effort does not have an incremental impact on participants' allocation decisions. Moreover, when asked by a supervisor to forgo a small amount of expected personal earnings, participants obey the request regardless of the presence or quality of an explanation.

Somewhat surprisingly, I find that participants are extremely willing to obey their supervisor's request. Specifically, I find that participants are willing to obey their supervisor's request to make a specific allocation of effort, even when the supervisor fails to provide an explanation for such a request, regardless of the size of the expected earnings that participants are asked to forgo. Nearly identical to Milgram's (1974) results, I find that 64.45 percent of participants who were merely asked to make an effort allocation were obedient to the request. Therefore, these results support the findings

from previous research suggesting that people are very willing to obey authority figures (Milgram 1974; Cadsby et al. 2006).

An alternative explanation for the high level of obedience observed in this study is that people are cognitive misers, and prefer to make decisions in a cognitively efficient way. Thus, if it is less cognitively demanding to make an effort allocation decision based on a written request relative to a calculation involving incentive weights, performance measure precisions, and risk preference, then when the written request is available, people follow the written request rather than making their own calculations.

With respect to attitude, I find that a reasonable and complete explanation plays a crucial role in forming perceptions of the justifiability of the incentive contract. In particular, relative to when the supervisor either does not provide an explanation or provides an unreasonable and incomplete explanation, a reasonable and complete explanation increases the perceived justifiability of an incentive contract that solely considers the performance measures' congruence with firm goals, and not the performance measures' precision. Furthermore, the perceived justifiability of the incentive contract decreases when the supervisor offers more than adequate compensation for performance measure imprecision in the incentive contract and also gives a reasonable and complete explanation for the requested allocation of effort.

These findings have important implications for applying economic theory to practical situations. Theoretically, profit maximizing incentive contracts trade off the sensitivity, precision, and congruence with which actions are measured based on the risk preferences and utility functions of the employees. In practice, however, achieving such a profit maximizing contract is not an easy task. The results from this study suggest that

a reasonable and complete explanation for a requested set of actions complements the use of monetary incentives by aligning employees' actions with firm goals, as well as influencing their attitudes toward the incentive contract. In particular, employees are willing to accept more risk when they understand why doing so is beneficial to the firm's performance. This implies that organizational tools, such as causal maps, reduce the size of the monetary incentives to motive goal congruent actions from its employees without creating ill will among the employees.

In addition, the results from this study suggest that merely requesting people to act in a goal congruent fashion complements the use of monetary incentives, except when the request is accompanied with an unreasonable and incomplete explanation, and a sizeable opportunity cost to employees for obeying the request. This implies that in contexts where the employees have little information about the supervisor and the organization's goals, it is not necessary for firms to spend resources explaining a requested set of actions to employees to get employees to follow orders. Conversely, in contexts where the employees are well informed about the supervisor and the organization's goals, and there are large economic incentives to disobey the request, then care should be taken to ensure that the request is coherent. Viewed from a slightly different perspective, this result also implies that economic incentives can adversely affect the favorable influence of a supervisor's request.

Finally, a number of recent studies investigate the impact of fairness-related incentives on behavior (e.g., Brüggen & Moers 2007; Hannan 2005; Fehr & Schmidt 2004). While this study is not the first to investigate monetary and non-monetary

antecedents of fairness in a laboratory setting (e.g., Libby 1999), it is novel in that it investigates these influences in a stochastic multi-action, multi-measure setting.

This paper is subject to several limitations. Because student participants were used in a laboratory setting, it is not known if these results interact with factors such as age and wealth. While the psychology literature on obedience to authority, and experiences from events such as the Enron scandal, suggest that obedience to authority occurs in certain contexts, empirical evidence from the organizational behavior literature suggests that people are reluctant to follow orders, or at least become resentful of the person who gives the orders, when a coherent explanation is not provided. The short duration of this task also raises questions regarding how long the observed effects persist.

While I do not view these results alone as conclusive evidence regarding the effect of requests and explanations, I expect that they contribute to existing research and will spur future research in this area. Future research could investigate if obedience persists over time when the compensation contract is not perceived to be justifiable. Future research could also move towards a better understanding of the boundary conditions of obedience to unfavorable requests by investigating if these effects persist in a setting that provides more contextual cues about the supervisor and the organization, or where a peer, rather than a supervisor, sends a message making a request to behave in a way that reduces expected earnings. Future research could also investigate how to make an explanation more reasonable and complete by evaluating alternative explanation devices, such as actual causal maps, or explanations that also discuss risk premiums.

APPENDIX A

TABLES

Table A1. Practice Session Results: The Effect of Incentive Weights and Performance Measure Precisions on the Amount of Effort Allocated to the Coordination Task

		Work Session 1	**Work Session 5**	**Work Session 10**	**Work Session 15**	**All work sessions**	**All work sessions (including participant dummies)**
Variable	**Predicted Sign**	**Coefficient (p-value)**	**Coefficient (p-value)**	**Coefficient (p-value)**	**Coefficient (p-value)**	**Coefficient (p-value)**	**Coefficient (p-value)**
Intercept	+	44.12	36.08	38.46	54.30	46.88	45.33
		(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
PE1	+	.02	.04	.03	.03	.03	.03
		(.00)	(.00)	(.00)	(.07)	(.00)	(.00)
PE2	-	-.02	-.02	-.03	-.06	-.03	-.03
		(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
PP1	+	.35	.35	.60	.38	.36	.37
		(.00)	(.00)	(.00)	(.03)	(.00)	(.00)
PP2	-	-.18	-.25	-.25	-.20	-.23	-.23
		(.00)	(.00)	(.01)	(.26)	(.00)	(.00)
Observations		154	154	91	29	1,370	1,370
Adjusted R^2		.33	.29	.43	.33	.34	.36

Note: All p-values are two sided.

Table A2 Number, Mean, and Spread Information for Key Variables

	N	Mean	Std. Dev	Min	1st Quartile	Median	3rd Quartile	Max
Contract	152	0.49	0.50	0	0	0	1	1
Request	152	0.76	0.43	0	1	1	1	1
Explanation Quality	152	0.26	0.44	0	0	0	1	1
IMT Effort 1	152	44.16	25.31	0	25	40	65	99
IMT Effort 2	152	47.51	21.34	0	35.5	50	50	100
Abs. Dev. 1	152	22.55	12.77	0	10	20	30	50
Abs. Dev. 2	152	14.43	15.88	0	0	10	25	50
Bonus 1	152	0.65	0.48	0	0	1	1	1
Bonus 2	152	0.63	0.49	0	0	1	1	1
Just Bonus 2	152	2.55	1.14	1	1	3	3	5
Perceived EQ	152	-0.06	1.91	-2.25	-1.28	-0.82	1.64	3.58
Earnings 2	152	312.50	420.16	0	0	250	250	1,500
Gender	152	0.34	0.48	0	0	0	1	1
GPA	152	3.22	0.51	0	3	3.2	3.55	4.2

Note: All variable definitions are found in Table A4.

Table A3 Correlation Matrix (N = 152)

	Contract	*Request*	*Explanation Quality (N=79)*	*IMT Effort 1*	*IMT Effort 2*	*Abs. Dev. 1*	*Abs. Dev. 2*	*Bonus 1*	*Bonus 2*	*Just Bonus 2*	*Perceived EQ*	*Earnings 2*	*Gender*	*GPA*
Contract		.01	-.01	.48	.41	.07	.07	-.11	-.05	.05	-.03	**.31**	-.07	.01
		(.92)	(.91)	**(.00)**	**(.00)**	(.37)	(.41)	(.19)	(.53)	(.52)	(.67)	**(.00)**	(.37)	(.93)
Request	.01		NA	.01	.02	**.18**	**-.32**	-.06	-.09	.06	**.71**	-.07	.05	-.06
	(.92)		NA	(.86)	(.77)	**(.03)**	**(.00)**	(.45)	(.26)	(.46)	**(.00)**	(.39)	(.51)	(.44)
Explanation Quality (N=79)	-.01	NA		-.06	-.18	.04	-.10	-.09	**.28**	.16	**.56**	.07	.14	-.03
	(.91)	NA		(.62)	(.11)	(.76)	(.38)	(.43)	**(.01)**	(.15)	**(.00)**	(.56)	(.22)	(.76)
IMT Effort 1	**.46**	-.01	-.06		**.56**	-.13	-.06	**-.21**	-.11	.07	.08	**.20**	-.12	-.01
	(.00)	(.87)	(.61)		**(.00)**	(.10)	(.48)	**(.01)**	(.18)	(.37)	(.31)	**(.01)**	(.16)	(.93)
IMT Effort 2	**.44**	.05	-.10	**.57**		-.12	-.10	-.05	**-.26**	.10	.01	**.21**	-.05	.01
	(.00)	(.56)	(.38)	**(.00)**		(.15)	(.23)	(.56)	**(.00)**	(.20)	(.88)	**(.01)**	(.51)	(.94)
Abs. Dev. 1	.08	**.18**	.02	**-.24**	-.07		**.28**	.11	.02	.10	.13	-.06	.01	.13
	(.34)	**(.03)**	(.85)	**(.00)**	(.38)		**(.00)**	(.18)	(.79)	(.23)	(.12)	(.49)	(.91)	(.11)
Abs. Dev. 2	.06	**-.38**	-.13	-.04	**-.17**	**.20**		.03	.11	.01	**-.26**	.10	-.03	**.17**
	(.45)	**(.00)**	(.26)	(.65)	**(.04)**	**(.01)**		(.71)	(.19)	(.87)	**(.00)**	(.23)	(.75)	**(.03)**
Bonus 1	-.11	-.06	-.09	**-.22**	-.05	.12	.09		-.05	-.06	-.05	-.06	-.03	.05
	(.19)	(.45)	(.43)	**(.01)**	(.54)	(.13)	(.25)		(.51)	(.48)	(.56)	(.50)	(.76)	(.50)
Bonus 2	-.05	-.09	**.28**	-.10	**-.28**	.01	.10	-.05		.11	.08	**.58**	.13	-.03
	(.53)	(.26)	**(.01)**	(.20)	**(.00)**	(.89)	(.22)	(.51)		(.16)	(.31)	**(.00)**	(.11)	(.69)
Just Bonus 2	.05	.05	.18	.08	.09	.07	-.01	-.05	.12		.14	**.24**	.06	.12
	(.50)	(.56)	(.12)	(.31)	(.26)	(.42)	(.93)	(.50)	(.16)		(.09)	**(.00)**	(.43)	(.15)
Perceived EQ	-.02	**.78**	**.58**	.05	.04	**.16**	**-.29**	-.05	.06	.11		.07	.09	-.02
	(.83)	**(.00)**	**(.00)**	(.54)	(.62)	**(.05)**	**(.00)**	(.51)	(.47)	(.20)		(.40)	(.25)	(.85)
Earnings 2	.10	-.07	.20	.03	-.07	-.03	.09	-.06	**.90**	**.20**	.08		-.01	.04
	(.24)	(.36)	(.08)	(.73)	(.42)	(.68)	(.26)	(.44)	**(.00)**	**(.01)**	(.35)		(.92)	(.61)
Gender	-.07	.05	.14	-.09	.02	-.01	-.07	-.03	.13	.08	.09	.08		.09
	(.37)	(.51)	(.22)	(.26)	(.85)	(.94)	(.39)	(.76)	(.11)	(.36)	(.27)	(.34)		(.25)
GPA	.06	-.05	.00	.01	-.02	.08	**.16**	.07	-.07	**.17**	-.02	-.03	.07	
	(.45)	(.54)	(.97)	(.91)	(.84)	(.33)	**(.04)**	(.36)	(.36)	**(.03)**	(.78)	(.73)	(.36)	

Note: This table reports Pearson (Spearman) correlations above (below) the diagonal. The correlation coefficient and a 2-tail p-value are reported in each cell. Correlations that are significant at the .05 level or less are reported in bold. Correlations that are significant at the .1 level or less are highlighted. All variables are defined in Table A4

Table A4 Variable Definitions

Contract	=	0 if participants were offered a 250¢ bonus for both tasks, or 1 if participants were offered a 250¢ bonus for the precisely measured task and a 1,250¢ bonus for the imprecisely measured task.
Request	=	indication of whether or not the fictitious supervisor requested that the participant make an equal allocation of effort before the second work session: 0 if no request was made, 1 if a request was made (115 participants received a request, while the remaining 37 did not receive a request).
Expl. Quality	=	indication of whether or not the quality of the explanation was coherent or incoherent: 0 = if the explanation was incoherent, 1 if the explanation was coherent. These correlations are based on the 79 participants that received an explanation from the fictitious supervisor.
IMT Effort 1	=	the amount of effort (between 0 and 100) allocated to the imprecisely measured task during the first work session.
IMT Effort 2	=	the amount of effort (between 0 and 100) allocated to the imprecisely measured task during the second work session.
Abs. Dev. 1	=	the absolute deviation from a 50/50 effort allocation during the first work session.
Abs. Dev. 2	=	the absolute deviation from a 50/50 effort allocation during the second work session.
Bonus 1	=	indication if money was earned during the first work session: 0 if no money was earned, 1 if money was earned.
Bonus 2	=	indication if money was earned during the second work session: 0 if no money was earned, 1 if money was earned.
Just Bonus 2	=	the perceived justifiability of the bonuses offered by the supervisor for the second work session.
Perceived EQ	=	a factor score based on factor loadings for the first factor from responses to questions about the explanation's reasonableness and completeness.
Earnings 2	=	the amount of money (between 0 and 1,500¢) earned during the second work session.
Gender	=	0 for male, 1 for female.
GPA	=	self reported grade point average.

Table A5

The Amount of Effort Allocated to the Imprecisely Measured Task during Work Session Two (*IMT Effort 2)* in Each Experimental Condition

	No Message	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation	
250¢ bonus	n = 19	n = 18	n = 20	n = 20	n = 77
	Mean = 31.16	Mean = 46.39	Mean = 38.30	Mean = 40.25	Mean = 38.94
	Median = 36.00	Median = 50.00	Median = 50.00	Median = 45.00	Median = 45.00
	S. Dev = 20.19	S. Dev = 13.49	S. Dev = 16.11	S. Dev = 16.18	S. Dev = 17.21
1,250¢ bonus	n = 18	n = 18	n = 19	n = 20	n = 75
	Mean = 62.94	Mean = 49.94	Mean = 49.84	Mean = 62.25	Mean = 56.32
	Median = 70.00	Median = 50.00	Median = 50.00	Median = 55.00	Median = 50.00
	S. Dev = 24.64	S. Dev = 19.15	S. Dev = 19.02	S. Dev = 21.41	S. Dev = 21.68
	n = 37	n = 36	n = 39	n = 40	N = 152
	Mean = 46.62	Mean = 48.17	Mean = 43.92	Mean = 51.25	Mean = 47.51
	Median = 40.00	Median = 50.00	Median = 50.00	Median = 50.00	Median = 50.00
	S. Dev = 27.38	S. Dev = 16.42	S. Dev = 18.31	S. Dev = 21.79	S. Dev = 21.34

Table A6

Regression Model (1) Correspondence Table

	No Message	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation
250¢	α	$\alpha+\beta_2$	$\alpha+\beta_2+\beta_3$	$\alpha+\beta_2+\beta_4$
1,250¢	$\alpha+\beta_1$	$\alpha+\beta_1+\beta_2+\beta_5$	$\alpha+\beta_1+\beta_2+\beta_3+\beta_5+\beta_6$	$\alpha+\beta_1+\beta_2+\beta_4+\beta_5+\beta_7$

Regression (1):

$$IMT\ Effort\ 2 = \alpha + \beta_1\, Bonus + \beta_2\, Request + \beta_3\, Coherent\ Explanation + \beta_4\, Incoherent\ Explanation + \beta_5\, Bonus{*}Request + \beta_6\, Bonus{*}\ Coherent\ Explanation + \beta_7\, Bonus{*}\ Incoherent\ Explanation + \varepsilon$$

Table A7

Effect of Bonus Size and Message Type on Effort Allocated to the Imprecisely Measured Task During Work Session Two (*IMT Effort 2*)

Contrast	Parameter	Hypothesis	Predicted Sign	Estimates (p value)	Estimates (p value)
	Intercept (a)		+	31.16	18.25
				(.00)	(.00)
NM slope	*Bonus* (β_1)	H_1	+	31.79	23.59
				(.00)	(.00)
RO/250 - NM/250	*Request* (β_2)		+	15.23	14.23
				(.01)	(.01)
RCE/250 - RO/250	*Coherent Explanation* (β_3)		+	-8.09	-6.27
				(.10)	(.13)
RIE/250 - RO/250	*Incoherent Explanation* (β_4)		-	-6.14	-3.58
				(.16)	(.26)
RO slope - NM slope	*Bonus*Request* (β_5)	H_2	-	-28.23	-26.13
				(.00)	(.00)
RCE slope - RO slope	*Bonus*Coherent Explanation* (β_6)	H_3	-	7.99	4.53
				(.18)	(.28)
RIE slope - RO slope	*Bonus*Incoherent Explanation* (β_7)	H_3	+	18.44	11.43
				(.02)	(.07)
	IMT Effort 1		+		.39
					(.00)
	Observations			152	152
	Adjusted R^2			.21	.37

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A8

F-tests of Joint Effects Based on the Regressions in Table A7

Contrast	Test	Predicted Sign	Estimates (p value)	Estimates (p value)
RO/1250 - NM/1250	$\beta_2 + \beta_5 < 0$	-	-13.00	-11.90
			(.02)	(.02)
RO slope - 0	$\beta_1 + \beta_5 > 0$	+	3.56	-(2.54)
			(.29)	(.33)
RIE/1250 - RO/1250	$\beta_4 + \beta_7 > 0$	+	12.31	7.85
			(.02)	(.08)
RO/250 - 50	$\alpha + \beta_2 < 50$	-	46.39	49.62
			(.21)	(.47)
RO/1250 - 50	$\alpha + \beta_1 + \beta_2 + \beta_5 > 50$	-	49.94	47.08
			(.50)	(.29)
RCE/1250 - RO/1250	$\beta_3 + \beta_6 < 0$	-	-.10	-1.75
			(.49)	(.38)
RIE slope - RCE slope	$\beta_6 - \beta_7 < 0$	-	-10.46	-6.90
			(.11)	(.18)
RCE/250 - RIE/250	$\beta_3 - \beta_4 > 0$	+	-1.95	-2.69
			(.37)	(.31)
RIE/1250 - RCE/1250	$\beta_4 + \beta_7 - \beta_3 - \beta_6 > 0$	+	12.41	9.59
			(.02)	(.04)
RIE/1250 - NM/1250	$\beta_2 + \beta_4 + \beta_5 + \beta_7 < 0$	-	-.69	-4.05
			(.46)	(.23)
NM slope - RCE slope	$-\beta_5 - \beta_6 > 0$	+	20.24	21.61
			(.01)	(.00)
NM slope - RIE slope	$-\beta_5 - \beta_7 > 0$	+	9.79	14.70
			(.13)	(.03)
RCE/250 - NM/250	$\beta_2 + \beta_3 > 0$	+	7.14	7.96
			(.12)	(.07)
RCE/1250 - NM/1250	$\beta_2 + \beta_3 + \beta_5 + \beta_6 < 0$	-	-13.10	-13.65
			(.02)	(.01)
RIE/250 - NM/250	$\beta_2 + \beta_4 > 0$	+	9.09	10.65
			(.07)	(.03)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A9

The Amount of Effort Allocated to the Imprecisely Measured Task during Work Session One (*IMT Effort 1)* in Each Experimental Condition

	No Message	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation	
250¢ bonus	n = 19	n = 18	n = 20	n = 20	n = 77
	Mean = 33.26	Mean = 35.83	Mean = 31.15	Mean = 29.25	Mean = 32.27
	Median = 30.00	Median = 35.00	Median = 30.00	Median = 30.00	Median = 30.00
	S. Dev = 18.73	S. Dev = 22.05	S. Dev = 19.96	S. Dev = 12.59	S. Dev = 18.36
1,250¢ bonus	n = 18	n = 18	n = 19	n = 20	n = 75
	Mean = 54.39	Mean = 51.56	Mean = 55.79	Mean = 63.05	Mean = 56.37
	Median = 55.00	Median = 52.50	Median = 60.00	Median = 74.00	Median = 60.00
	S. Dev = 19.86	S. Dev = 27.66	S. Dev = 28.45	S. Dev = 26.52	S. Dev = 25.74
	n = 37	n = 36	n = 39	n = 40	N = 152
	Mean = 43.54	Mean = 43.69	Mean = 43.15	Mean = 46.15	Mean = 44.16
	Median = 40.00	Median = 38.00	Median = 35.00	Median = 40.00	Median = 40.00
	S. Dev = 21.83	S. Dev = 25.91	S. Dev = 27.17	S. Dev = 26.70	S. Dev = 25.31

Table A10

Effect of Bonus Size on Effort Allocated to the Imprecisely Measured Task During Work Session One (*IMT Effort 1*)

Contrast	**Parameter**	**Predicted Sign**	**Estimates (p value)**
	Intercept (α)	0	33.26
			(.00)
NM slope	*Bonus* (β_1)	+	21.13
			(.00)
RO/250 - NM/250	*Request* (β_2)	0	2.57
			(.73)
RCE/250 - RO/250	*Coherent Explanation* (β_3)	0	-4.68
			(.52)
RIE/250 - RO/250	*Incoherent Explanation* (β_4)	0	-6.58
			(.37)
RO slope - NM slope	*Bonus*Request* (β_5)	0	-5.40
			(.61)
RCE slope - RO slope	*Bonus*Coherent Explanation* (β_6)	0	8.92
			(.39)
RIE slope - RO slope	*Bonus*Incoherent Explanation* (β_7)	0	18.08
			(.08)
	Observations		152
	Adjusted R^2		.21

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A11

F-tests of Joint Effects Based on the Regression in Table A10

Contrast	Test	Predicted Sign	Estimates (p value)
RCE/250 - NM/250	$\beta_2 + \beta_3 = 0$	0	-2.11
			(.77)
RIE/250 - NM/250	$\beta_2 + \beta_4 = 0$	0	-4.01
			(.58)
RIE/1250 - NM/1250	$\beta_2 + \beta_4 + \beta_5 + \beta_7 = 0$	0	8.66
			(.24)
RIE/1250 - RO/1250	$\beta_4 + \beta_7 = 0$	0	11.49
			(.12)
RIE/1250 - RCE/1250	$\beta_4 + \beta_7 - \beta_3 - \beta_6 = 0$	0	7.26
			(.32)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A12

The Mean Deviation from a 50/50 Allocation of Effort During Work Session Two (*Abs. Dev. 2*) in Each Experimental Condition

	No Message	**Request Only**	**Request and Coherent Explanation**	**Request and Incoherent Explanation**	
250¢ bonus	n = 19	n = 18	n = 20	n = 20	n = 77
	Mean = 22.00	Mean = 7.39	Mean = 12.20	Mean = 11.75	Mean = 13.38
	Median = 20.00	Median = 0.00	Median = 2.50	Median = 5.00	Median = 10.00
	S. Dev = 16.47	S. Dev = 11.74	S. Dev = 15.71	S. Dev = 14.71	S. Dev = 15.46
1,250¢ bonus	n = 18	n = 18	n = 19	n = 20	n = 75
	Mean = 24.83	Mean = 8.72	Mean = 10.90	Mean = 17.65	Mean = 15.52
	Median = 25.00	Median = 0.00	Median = 0.00	Median = 15.00	Median = 10.00
	S. Dev = 11.47	S. Dev = 16.92	S. Dev = 15.38	S. Dev = 16.98	S. Dev = 16.33
	n = 37	n = 36	n = 39	n = 40	N = 152
	Mean = 23.38	Mean = 8.06	Mean = 11.56	Mean = 14.70	Mean = 14.43
	Median = 20.00	Median = 0.00	Median = 0.00	Median = 10.00	Median = 10.00
	S. Dev = 14.14	S. Dev = 14.37	S. Dev = 15.36	S. Dev = 15.96	S. Dev = 15.88

Table A13

Effect of Bonus Size and Message Type on Absolute Deviation from an Equal Allocation of Effort During Work Session Two (*Abs. Dev. 2*)

Contrast	Parameter	Predicted Sign	Estimates (p value)	Estimates (p value)
	Intercept (a)	+	22.00	13.62
			(.00)	(.00)
Slope of NM	*Bonus* (β_1)	?	2.83	4.07
			(.57)	(.39)
RO/250 - NM/250	*Request* (β_2)	-	-14.61	-15.38
			(.00)	(.00)
RCE/250 - RO/250	*Coherent Explanation* (β_3)	-	4.81	3.97
			(.16)	(.20)
RIE/250 - RO/250	*Incoherent Explanation* (β_4)	+	4.36	4.81
			(.19)	(.15)
RO slope - NM slope	*Bonus*Request* (β_5)	?	-1.50	-3.41
			(.83)	(.61)
RCE slope - RO slope	*Bonus*Coherent Explanation* (β_6)	?	-2.64	-2.78
			(.71)	(.67)
RIE slope - RO slope	*Bonus*Incoherent Explanation* (β_7)	?	4.57	2.56
			(.51)	(.70)
	Abs. Dev. 1	+		.42
				(.00)
	Observations		152	152
	Adjusted R^2		.09	.20

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A14

F-tests of Joint Effects Based on the Regressions in Table A13

Contrast	Test	Predicted Sign	Estimates (p value)	Estimates (p value)
RO/1250 - NM/1250	$\beta_2 + \beta_5 < 0$	-	-16.11	-18.79
			(.00)	(.00)
RO/250 - 0	$\alpha + \beta_2 > 0$	+	7.39	7.69
			(.02)	(.03)
RO/1250 - 0	$\alpha + \beta_1 + \beta_2 + \beta_5 > 0$	+	8.72	8.35
			(.01)	(.02)
RCE/1250 - RO/1250	$\beta_3 + \beta_6 < 0$	-	2.17	1.19
			(.33)	(.40)
RIE/1250 - RO/1250	$\beta_4 + \beta_7 > 0$	+	8.93	7.38
			(.04)	(.06)
RIE slope - RCE slope	$\beta_6 - \beta_7 = 0$	?	-7.21	-5.34
			(.29)	(.41)
RCE/250 - RIE/250	$\beta_3 - \beta_4 < 0$	-	.45	-.85
			(.46)	(.43)
RIE/1250 - RCE/1250	$\beta_4 + \beta_7 - \beta_3 - \beta_6 > 0$	+	6.76	6.19
			(.08)	(.09)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A15

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Message Condition

	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation	Total
Disobeyed	n = 13 Column % = 36.11	n = 19 Column % = 48.72	n = 26 Column % = 65.00	n = 58 Column % = 50.43
Obeyed	n = 23 Column % = 63.89	n = 20 Column % = 51.28	n = 14 Column % = 35.00	n = 57 Column % = 49.57
Total	n = 36	n = 39	n = 40	N = 115

Table A16

Chi-square Tests Based on the Numbers Reported in Table A15

Contrast	χ^2	df	p value (one-sided)
RO - RCE	1.22	1	0.27
RO - RIE	6.33	1	0.01
RCE - RIE	2.14	1	0.14

Table A17

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Message Condition for the 250¢ Conditions

	RO/250	RCE/250	RIE/250	Total
Disobeyed	n = 7 Column % = 38.89	n = 10 Column % = 50.00	n = 12 Column % = 60.00	n = 29 Column % = 50.00
Obeyed	n = 11 Column % = 61.11	n = 10 Column % = 50.00	n = 8 Column % = 40.00	n = 29 Column % = 50.00
Total	n = 18	n = 20	n = 20	N = 58

Table A18

Chi-square Tests Based on the Numbers Reported in Table A17

Contrast	χ^2	df	p value (one-sided)
RO/250 - RCE/250	0.47	1	0.49
RO/250 - RIE/250	1.69	1	0.19
RCE/250 - RIE/250	0.40	1	0.53

Table A19

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Message Condition for the 1,250¢ Conditions

	RO/1250	RCE/1250	RIE/1250	Total
Disobeyed	n = 6 Column % = 33.33	n = 9 Column % = 47.37	n = 14 Column % = 70.00	n = 29 Column % = 50.88
Obeyed	n = 12 Column % = 66.67	n = 10 Column % = 52.63	n = 6 Column % = 30.00	n = 28 Column % = 49.12
Total	n = 18	n = 19	n = 20	N = 57

Table A20

Chi-square Tests Based on the Numbers Reported in Table A19

Contrast	χ^2	df	p value (one-sided)
RO/1250 - RCE/1250	0.76	1	0.38
RO/1250 - RIE/1250	5.11	1	0.02
RCE/1250 - RIE/1250	2.03	1	0.15

Table A21

Mann-Whitney U Test of *IMT Effort 2* for All Observations

Contrast	U	n_1, n_2	approximate p value (1-tailed)
RO - RIE	720.50	36, 40	0.50
RO - RCE	773.50	36, 39	0.22
RCE - RIE	867.00	39, 40	0.20

Table A22

Mann-Whitney U Test of *Abs. Dev. 2* for All Observations

Contrast	U	n_1, n_2	approximate p value (1-tailed)
RO - RIE	936.00	36, 40	0.01
RO - RCE	801.50	36, 39	0.15
RCE - RIE	889.50	39, 40	0.14

Table A23

Mann-Whitney U Test of *IMT Effort 2* for the 250¢ Conditions

Contrast	U	n_1, n_2	approximate p value (1-tailed)
RO/250 - RIE/250	219.50	18, 20	0.13
RO/250 - RCE/250	214.50	18, 20	0.16
RCE/250 - RIE/250	202.50	20, 20	0.47

Table A24

Mann-Whitney U Test of *Abs. Dev. 2* for the 250¢ Conditions

Contrast	U	n_1, n_2	approximate p value (1-tailed)
RO/250 - RIE/250	217.00	18, 20	0.14
RO/250 - RCE/250	208.00	18, 20	0.21
RCE/250 - RIE/250	206.50	20, 20	0.43

Table A25

Mann-Whitney U Test of *IMT Effort 2* for the 1,250¢ Conditions

Contrast	U	n_1, n_2	approximate p value (1-tailed)
RO/1250 - RIE/1250	224.50	18, 20	0.10
RO/1250 - RCE/1250	173.50	18, 19	0.47
RCE/1250 - RIE/1250	240.00	19, 20	0.08

Table A26

Mann-Whitney U Test of *Abs. Dev. 2* for the 1,250¢ Conditions

Contrast	U	n_1, n_2	approximate p value (1-tailed)
RO/1250 - RIE/1250	247.00	18, 20	0.03
RO/1250 - RCE/1250	192.50	18, 19	0.26
RCE/1250 - RIE/1250	237.50	19, 20	0.09

Table A27 Mediation Analysis Regressions

	Dependent Variable		**Step One** IMT Effort 2		**Step Two** Perceived EQ		**Step Three** IMT Effort 2		**Step Four** IMT Effort 2
Contrast	**Parameter**	**Predicted Sign**	**Standardized Estimates (p value)**	**Predicted Sign**	**Standardized Estimates (p value)**	**Predicted Sign**	**Standardized Estimates (p value)**	**Predicted Sign**	**Standardized Estimates (p value)**
	Intercept (α)		.00		.00		.00		.00
			(.00)		(.91)		(.00)		(.00)
RCE/1250 - RIE/1250	*Explanation Adequacy (β_1)*	-	-.23	+	.52			-	-.11
			(.05)		(.00)				(.23)
	Perceived EQ (β_2)					-	-.28	-	-.22
							(.02)		(.08)
	IMT Effort 1 (β_3)	+	.54	?	.26	+	.62	+	.60
			(.00)		(.08)		(.00)		(.00)
	Observations		39		39		39		39
	Adjusted R^2		(.34)		(.26)		(.37)		(.36)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A28

Bonus Earned During Work Session Two (*Earnings 2*) in Each Experimental Condition

	No Message	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation	
250¢ bonus	n = 19	n = 18	n = 20	n = 20	n = 77
	Mean = 184.21	Mean = 152.78	Mean = 250.00	Mean = 150.00	Mean = 185.06
	Median = 250.00	Median = 125.00	Median = 250.00	Median = 125.00	Median = 250.00
	S. Dev = 113.10	S. Dev = 174.45	S. Dev = 140.49	S. Dev = 170.14	S. Dev = 153.91
1,250¢ bonus	n = 18	n = 18	n = 19	n = 20	n = 75
	Mean = 555.56	Mean = 180.56	Mean = 526.32	Mean = 500.00	Mean = 443.33
	Median = 250.00	Median = 0.00	Median = 250.00	Median = 250.00	Median = 250.00
	S. Dev = 578.76	S. Dev = 351.53	S. Dev = 576.72	S. Dev = 601.53	S. Dev = 549.22
	n = 37	n = 36	n = 39	n = 40	N = 152
	Mean = 364.86	Mean = 166.67	Mean = 384.62	Mean = 325.00	Mean = 312.50
	Median = 250.00	Median = 0.00	Median = 250.00	Median = 250.00	Median = 250.00
	S. Dev = 447.19	S. Dev = 273.86	S. Dev = 432.43	S. Dev = 470.95	S. Dev = 420.16

Table A29

Effect of Bonus Size and Message Type on Bonus Earned During Work Session Two (*Earnings 2*)

Contrast	**Parameter**	**Predicted Sign**	**Estimates (p value)**
	Intercept (α)	+	184.21
			(.02)
NM slope	*Bonus* (β_1)	+	371.35
			(.00)
RO/250 - NM/250	*Request* (β_2)	-	-31.43
			(.40)
RCE/250 - RO/250	*Coherent Explanation* (β_3)	-	97.22
			(.22)
RIE/250 - RO/250	*Incoherent Explanation* (β_4)	+	-2.78
			(.49)
RO slope - NM slope	*Bonus*Request* (β_5)	-	-343.57
			(.03)
RCE slope - RO slope	*Bonus*Coherent Explanation* (β_6)	-	248.54
			(.09)
RIE slope - RO slope	*Bonus*Incoherent Explanation* (β_7)	+	322.22
			(.04)
	Observations		152
	Adjusted R^2		.12

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A30

F-tests of Joint Effects Based on the Regressions in Table A29

Contrast	Test	Predicted Sign	Estimates (p value)
RCE/250 - NM/250	$\beta_2 + \beta_3 < 0$	-	65.79
			(.30)
RIE/250 - NM/250	$\beta_2 + \beta_4 < 0$	-	-34.21
			(.39)
RO/1250 - NM/1250	$\beta_2 + \beta_5 < 0$	-	-375.00
			(.00)
RCE/1250 - NM/1250	$\beta_2 + \beta_3 + \beta_5 + \beta_6 < 0$	-	-29.24
			(.41)
RIE/1250 - NM/1250	$\beta_2 + \beta_4 + \beta_5 + \beta_7 < 0$	-	-55.56
			(.33)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A31

Perceived Justifiability of Bonuses Offered During Work Session Two (*Just Bonus 2*) in Each Experimental Condition

	No Message	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation	
250¢ bonus	n = 19	n = 18	n = 20	n = 20	n = 77
	Mean = 2.21	Mean = 2.44	Mean = 3.00	Mean = 2.30	Mean = 2.49
	Median = 2.00	Median = 3.00	Median = 3.00	Median = 2.50	Median = 3.00
	S. Dev = 0.98	S. Dev = 0.98	S. Dev = 1.12	S. Dev = 1.17	S. Dev = 1.11
1,250¢ bonus	n = 18	n = 18	n = 19	n = 20	n = 75
	Mean = 2.67	Mean = 2.78	Mean = 2.53	Mean = 2.50	Mean = 2.61
	Median = 3.00	Median = 3.00	Median = 3.00	Median = 2.50	Median = 3.00
	S. Dev = 1.24	S. Dev = 1.35	S. Dev = 0.96	S. Dev = 1.19	S. Dev = 1.17
	n = 37	n = 36	n = 39	n = 40	N = 152
	Mean = 2.43	Mean = 2.61	Mean = 2.77	Mean = 2.40	Mean = 2.55
	Median = 3.00	Median = 3.00	Median = 3.00	Median = 2.50	Median = 3.00
	S. Dev = 1.12	S. Dev = 1.20	S. Dev = 1.06	S. Dev = 1.17	S. Dev = 1.14

Table A32

Effect of Bonus Size and Message Type on Perceived Justifiability of Bonuses
(*Just Bonus 2*)

Contrast	Parameter	Predicted Sign	Estimates (p value)	Estimates (p value)
	Intercept (α)	+	2.21	2.08
			(.00)	(.00)
NM slope	*Bonus* (β_1)	+	.46	.19
			(.11)	(.31)
RO/250 - NM/250	*Request* (β_2)	0	.23	.26
			(.53)	(.48)
RCE/250 - RO/250	*Coherent Explanation* (β_3)	+	.56	.49
			(.07)	(.09)
RIE/250 - RO/250	*Incoherent Explanation* (β_4)	0	-.14	-.14
			(.70)	(.69)
RO slope - NM slope	*Bonus*Request* (β_5)	0	-.12	.12
			(.82)	(.82)
RCE slope - RO slope	*Bonus*Coherent Explanation* (β_6)	-	-.81	-.98
			(.06)	(.03)
RIE slope - RO slope	*Bonus*Incoherent Explanation* (β_7)	0	-.13	-.36
			(.80)	(.48)
	Earnings 2	+		.00
				(.00)
	Observations		152	152
	Adjusted R^2		.00	.05

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A33

F-tests of Joint Effects Based on the Regressions in Table A32

Contrast	Test	Predicted Sign	Estimates (p value)	Estimates (p value)
RO/1250 - RO/250	$\beta_1 + \beta_5 > 0$	+	.33	.31
			(.19)	(.20)
RIE/1250 - RIE/250	$\beta_1 + \beta_5 + \beta_7 > 0$	+	.20	-.05
			(.29)	(.45)
RCE/250 - NM/250	$\beta_2 + \beta_3 > 0$	+	.79	.74
			(.02)	(.02)
RCE/250 - RIE/250	$\beta_3 - \beta_4 > 0$	+	.70	.63
			(.03)	(.04)
RCE/1250 - NM/1250	$\beta_2 + \beta_3 + \beta_5 + \beta_6 = 0$	0	-.14	-.12
			(.71)	(.74)
RCE/1250 - RO/1250	$\beta_3 + \beta_6 = 0$	0	-.25	-.50
			(.50)	(.18)
RCE/1250 - RIE/1250	$\beta_3 + \beta_6 - \beta_5 - \beta_7 = 0$	0	.00	-.26
			(.94)	(.98)
RCE/1250 - RCE/250	$\beta_1 + \beta_5 + \beta_6 = 0$	0	-.47	-.67
			(.20)	(.06)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A34 Number, Mean, and Spread Information for Key Variables for Participants in the 10 Percent Condition

	N	Mean	Std. Dev	Min	1st Quartile	Median	3rd Quartile	Max
Contract	51	1.18	0.39	1	1	1	1	2
Request	51	1.00	0.00	1	1	1	1	1
Explanation Quality	51	0.41	0.50	0	0	0	1	1
IMT Effort 1	51	61.53	26.74	10	40	60	85	100
IMT Effort 2	51	28.08	30.18	8	10	10	30	100
Abs. Dev. 1	51	51.53	26.74	0	30	50	75	90
Abs. Dev. 2	51	18.16	30.13	0	0	0	20	90
Bonus 1	51	0.51	0.50	0	0	1	1	1
Bonus 2	51	0.73	0.45	0	0	1	1	1
Just Bonus 2	51	2.18	1.29	1	1	2	3	5
Perceived EQ	51	0.19	1.80	-1.28	-1.28	-1.28	2.10	3.58
Earnings 2	51	372.55	562.08	0	0	250	250	2,500
Gender	51	0.45	0.50	0	0	0	1	1
GPA	51	3.11	0.65	0	2.8	3.3	3.5	4

Note: All variable definitions are found in Table A4.

Table A35 Correlation Matrix (N = 51)

	Contract	*Explanation Presence*	*IMT Effort 1*	*IMT Effort 2*	*Abs. Dev. 1*	*Abs. Dev. 2*	*Bonus 1*	*Bonus 2*	*Just Bonus 2*	*Perceived EQ*	*Earnings 2*	*Gender*	*GPA*
Contract		**-.39**	.25	.15	.25	.15	.04	-.18	-.22	**-.38**	.22	-.21	-.06
		(.00)	(.08)	(.29)	(.08)	(.30)	(.77)	(.22)	(.11)	**(.01)**	(.12)	(.13)	(.66)
Explanation Presence	**-.39**		-.22	-.07	-.22	-.06	.10	.25	.13	**.90**	-.01	.20	-.02
	(.00)		(.12)	(.64)	(.12)	(.65)	(.47)	(.08)	(.35)	**(.00)**	(.97)	(.15)	(.90)
IMT Effort 1	.25	-.25		**.44**	**1.00**	**.44**	-.20	-.04	-.06	**-.32**	**.31**	**-.40**	.02
	(.08)	(.08)		**(.00)**	**(.00)**	**(.00)**	(.17)	(.79)	(.68)	**(.02)**	**(.03)**	**(.00)**	(.90)
IMT Effort 2	.01	-.01	.26		**.44**	**1.00**	.01	-.13	.00	-.13	**.59**	-.26	**.34**
	(.93)	(.93)	(.06)		**(.00)**	**(.00)**	(.97)	(.37)	(1.00)	(.36)	**(.00)**	(.06)	**(.02)**
Abs. Dev. 1	.25	-.25	**1.00**	.26		**.44**	-.20	-.04	-.06	**-.32**	**.31**	**-.40**	.02
	(.08)	(.08)	**(.00)**	(.06)		**(.00)**	(.17)	(.79)	(.68)	**(.02)**	**(.03)**	**(.00)**	(.90)
Abs. Dev. 2	-.01	.04	.25	**.96**	.25		.00	-.13	.00	-.13	**.59**	-.26	**.34**
	(.95)	(.78)	(.08)	**(.00)**	(.08)		(.99)	(.38)	(.99)	(.38)	**(.00)**	(.07)	**(.02)**
Bonus 1	.04	.10	-.18	.06	-.18	.01		.01	-.02	.05	.04	.18	-.20
	(.77)	(.47)	(.21)	(.70)	(.21)	(.92)		(.93)	(.90)	(.71)	(.78)	(.21)	(.15)
Bonus 2	-.18	.25	-.06	-.12	-.06	-.10	.01		-.09	.23	**.41**	.03	-.05
	(.22)	(.08)	(.70)	(.39)	(.70)	(.49)	(.93)		(.54)	(.10)	**(.00)**	(.85)	(.72)
Just Bonus 2	-.26	.15	-.07	-.02	-.07	.01	.00	-.05		.13	-.09	.09	.00
	(.07)	(.30)	(.63)	(.87)	(.63)	(.95)	(.98)	(.73)		(.36)	(.55)	(.53)	(.99)
Perceived EQ	**-.41**	**.87**	**-.35**	-.02	**-.35**	.04	.06	.22	.17		-.10	**.29**	-.01
	(.00)	**(.00)**	**(.01)**	(.89)	**(.01)**	(.79)	(.69)	(.13)	(.23)		(.47)	**(.04)**	(.96)
Earnings 2	-.06	.19	.12	.19	.12	.20	.03	**.88**	-.03	.10		-.16	.20
	(.69)	(.19)	(.40)	(.19)	(.40)	(.15)	(.81)	**(.00)**	(.82)	(.47)		(.25)	(.16)
Gender	-.21	.20	**-.41**	-.17	**-.41**	-.13	.18	.03	.11	**.33**	-.05		-.14
	(.13)	(.15)	**(.00)**	(.22)	**(.00)**	(.37)	(.21)	(.85)	(.44)	**(.02)**	(.71)		(.32)
GPA	-.12	-.08	.15	**.38**	.15	**.37**	-.17	-.04	-.01	-.07	.09	-.11	
	(.41)	(.56)	(.29)	**(.01)**	(.29)	**(.01)**	(.23)	(.79)	(.94)	(.64)	(.55)	(.44)	

Note: This table reports Pearson (Spearman) correlations above (below) the diagonal. The correlation coefficient and a 2-tail p-value are reported in each cell. Correlations that are significant at the .05 level or less are reported in bold. Correlations that are significant at the .1 level or less are highlighted. All variables are defined in Table A4

Table A36

The Amount of Effort Allocated to the Imprecisely Measured Task during Work Session Two (*IMT Effort 2*) in Each Experimental Condition of the 10 Percent Condition

	Request Only	**Request and Coherent Explanation**	
1,250¢ bonus	n = 21 Mean = 26.33 Median = 10.00 S. Dev = 28.84	n = 21 Mean = 25.67 Median = 10.00 S. Dev = 26.33	n = 42 Mean = 26.00 Median = 10.00 S. Dev = 27.28
2,500¢ bonus	n = 9 Mean = 37.78 Median = 10.00 S. Dev = 41.84		n = 9 Mean = 37.78 Median = 10.00 S. Dev = 41.84
	n = 30 Mean = 29.77 Median = 10.00 S. Dev = 32.94	n = 21 Mean = 25.67 Median = 10.00 S. Dev = 26.33	N = 51 Mean = 28.08 Median = 10.00 S. Dev = 30.18

Table A37

Regression Model (2) Correspondence Table

	Request Only	Request and Coherent Explanation
1,250¢	α	$\alpha+\beta_2$
2,500¢	$\alpha+\beta_1$	

Regression (2):

$$IMT\ Effort\ 2 = \alpha + \beta_1\, Bonus + \beta_2\, Coherent\ Explanation + \varepsilon$$

Table A38

Effect of Bonus Size and Message Type on Effort Allocated to the Imprecisely Measured Task During Work Session Two (*IMT Effort 2*) in the 10 Percent Condition

Contrast	Parameter	Hypothesis	Predicted Sign	Estimates (p value)	Estimates (p value)
	Intercept (α)		+	14.89	-9.40
				(.19)	(.29)
RO/1250/10% - RO/2500/10%	*Bonus (β_1)*		+	11.44	4.91
				(.18)	(.33)
RCE/1250/10% - RO/1250/10%	*Coherent Explanation(β_2)*	H_3	+	-.67	3.21
				(.47)	(.36)
	IMT Effort 1		+		.49
					(.00)
	Observations			51	51
	Adjusted R^2			-.02	.15

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A39

The Amount of Effort Allocated to the Imprecisely Measured Task during Work Session One (*IMT Effort 1*) in Each Experimental Condition of the 10 Percent Condition

	Request Only	**Request and Coherent Explanation**	
1,250¢ bonus	n = 21 Mean = 62.43 Median = 60.00 S. Dev = 26.28	n = 21 Mean = 54.57 Median = 40.00 S. Dev = 26.68	n = 42 Mean = 58.50 Median = 55.00 S. Dev = 26.46
2,500¢ bonus	n = 9 Mean = 75.67 Median = 85.00 S. Dev = 24.64		n = 9 Mean = 75.67 Median = 85.00 S. Dev = 24.64
	n = 30 Mean = 66.40 Median = 66.00 S. Dev = 26.11	n = 21 Mean = 54.57 Median = 40.00 S. Dev = 26.68	N = 51 Mean = 61.53 Median = 60.00 S. Dev = 26.74

Table A40

Effect of Bonus Size and Message Type on Effort Allocated to the Imprecisely Measured Task during Work Session One (*IMT Effort 1)* in the 10 Percent Condition

Contrast	**Parameter**	**Predicted Sign**	**Estimates (p value)**
	Intercept (α)	+	49.19
			(.00)
RO/1250/10% - RO/2500/10%	*Bonus (β_1)*	+	13.24
			(.11)
RCE/1250/10% - RO/1250/10%	*Coherent Explanation(β_2)*		-7.86
			(.34)
	Observations		51
	Adjusted R^2		.04

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A41

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Message Condition in the 10 Percent Condition

	RO/1250/10%	**RCE/1250/10%**	**Total**
Disobeyed	n = 9 Column % = 42.86	n = 11 Column % = 52.38	n = 20 Column % = 47.62
Obeyed	n = 12 Column % = 57.14	n = 10 Column % = 47.62	n = 22 Column % = 52.38
Total	n = 21	n = 21	N = 42

Table A42

Chi-square Tests Based on the Numbers Reported in Table4.40

Contrast	χ^2	**df**	**p value (one-sided)**
RO/1250/10% - RCE/1250/10%	0.38	1	0.54

Table A43

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Bonus Condition in the 10 Percent Condition

	RO/1250/10%	R0/2500/10%	Total
Disobeyed	n = 9 Column % = 42.86	n = 3 Column % = 33.33	n = 12 Column % = 40.00
Obeyed	n = 12 Column % = 57.14	n = 6 Column % = 66.67	n = 18 Column % = 60.00
Total	n = 21	n = 9	N = 30

Table A44

Chi-square Tests Based on the Numbers Reported in Table A43

Contrast	χ^2	df	p value (one-sided)	Fisher's exact test p value
RO/1250/10% - RO/2500/10%	0.24	1	0.63	0.70

Table A45

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Supervisor's Request for the "Request Only" Conditions

	RO/10%	**RO/50%**	**Total**
Disobeyed	n = 12 Column % = 40.00	n = 13 Column % = 36.11	n = 25 Column % = 37.88
Obeyed	n = 18 Column % = 60.00	n = 23 Column % = 63.89	n = 41 Column % = 62.12
Total	n = 30	n = 36	N = 66

Table A46

Chi-square Tests Based on the Numbers Reported in Table A45

Contrast	χ^2	**df**	**p value (one-sided)**
RO/10% - RO/50%	0.11	1	0.75

Table A47

Contingency Table Indicating the Number of People Who Obeyed the Supervisor's Request by Supervisor's Request for the "Request and Coherent Explanation" Conditions

	RCE/10%	**RCE/50%**	**Total**
Disobeyed	n = 11 Column % = 52.38	n = 19 Column % = 48.72	n = 30 Column % = 50.00
Obeyed	n = 10 Column % = 47.62	n = 20 Column % = 51.28	n = 30 Column % = 50.00
Total	n = 21	n = 39	N = 60

Table A48

Chi-square Tests Based on the Numbers Reported in Table A47

Contrast	χ^2	**df**	**p value (one-sided)**
RCE/10% - RCE/50%	0.07	1	0.79

Table A49

Bonus Earned During Work Session Two (*Earnings 2*) in Each Experimental Condition of the 10 Percent Condition

	Request Only	**Request and Coherent Explanation**	
1,250¢ bonus	n = 21 Mean = 261.90 Median = 250.00 S. Dev = 348.89	n = 21 Mean = 369.05 Median = 250.00 S. Dev = 415.47	n = 42 Mean = 315.48 Median = 250.00 S. Dev = 382.78
2,500¢ bonus	n = 9 Mean = 638.89 Median = 250.00 S. Dev = 1061.48		n = 9 Mean = 638.89 Median = 250.00 S. Dev = 1061.48
	n = 30 Mean = 375.00 Median = 250.00 S. Dev = 652.42	n = 21 Mean = 369.05 Median = 250.00 S. Dev = 415.47	N = 51 Mean = 372.55 Median = 250.00 S. Dev = 562.08

Table A50

Effect of Bonus Size and Message Type on Bonus Earned During Work Session Two (*Earnings 2*) in the 10 Percent Condition

Contrast	**Parameter**	**Predicted Sign**	**Estimates (p value)**
	Intercept (α)	+	-115.08
			(.35)
RO/1250/10% - RO/2500/10%	*Bonus (β_1)*	+	376.98
			(.05)
RCE/1250/10% - RO/1250/10%	*Coherent Explanation(β_2)*	-	107.14
			(.27)
	Observations		51
	Adjusted R^2		.02

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A51

Perceived Justifiability of Bonuses Offered During Work Session Two (*Just Bonus 2*) in Each Experimental Condition of the 10 Percent Condition

	Request Only	**Request and Coherent Explanation**	
1,250¢ bonus	n = 21 Mean = 2.24 Median = 2.00 S. Dev = 1.26	n = 21 Mean = 2.38 Median = 3.00 S. Dev = 1.28	n = 42 Mean = 2.31 Median = 2.50 S. Dev = 1.26
2,500¢ bonus	n = 9 Mean = 1.56 Median = 1.00 S. Dev = 1.33		n = 9 Mean = 1.56 Median = 1.00 S. Dev = 1.33
	n = 30 Mean = 2.03 Median = 1.00 S. Dev = 1.30	n = 21 Mean = 2.38 Median = 3.00 S. Dev = 1.28	N = 51 Mean = 2.18 Median = 2.00 S. Dev = 1.29

Table A52

Regression Model (3) Correspondence Table

		Request Only	**Request and Coherent Explanation**
1,250¢	**10%**	α	$\alpha+\beta_1$
	50%	$\alpha+\beta_2$	$\alpha+\beta_1+\beta_2+\beta_3$
2,500¢	**10%**	$\alpha+\beta_4$	

Regression (3):

$$\textit{Just Bonus 2} = \alpha + \beta_1 \textit{ Coherent Explanation} + \beta_2 \textit{ Effort Request} + \beta_3 \textit{ Effort Request*Coherent Explanation} + \beta_4 \textit{ Bonus} + \varepsilon$$

Table A53

Effect of Bonus Size, Effort Request, and Message Type on Perceived Justifiability of Bonuses During Work Session Two (*Just Bonus 2*)

Contrast	Parameter	Predicted Sign	Estimates (p value)	Estimates (p value)
	Intercept (α)	+	2.92	2.95
			(.00)	(.00)
RCE/1250/10% - RO/1250/10%	*Coherent Explanation* (β_1)	+	.14	.11
			(.35)	(.38)
RO/1250/50% - RO/1250/10%	*Effort Request* (β_2)	?	.54	.56
			(.18)	(.16)
RCE slope - RO slope	*Effort Request*Coherent Explanation* (β_3)	?	-.39	-.46
			(.48)	(.41)
RO/2500/10% - RO/1250/10%	*Bonus* (β_4)	?	-.68	-.79
			(.17)	(.12)
	Earnings 2	+		.00
				(.14)
	Observations		88	88
	Adjusted R^2		.03	.03

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

Table A54

F-tests of Joint Effects Based on the Regressions in Table A53

Contrast	Test	Predicted Sign	Estimates (p value)	Estimates (p value)
RCE/1250/10% - RCE/1250/50%	$\beta_2 + \beta_3 = 0$	?	.15	.10
			(.71)	(.80)

Note: 1-sided (2-sided) p-values are reported for coefficients that (do not) have a predicted direction.

APPENDIX B

FIGURES

Figure B1

Dimensions of Organizational Justice

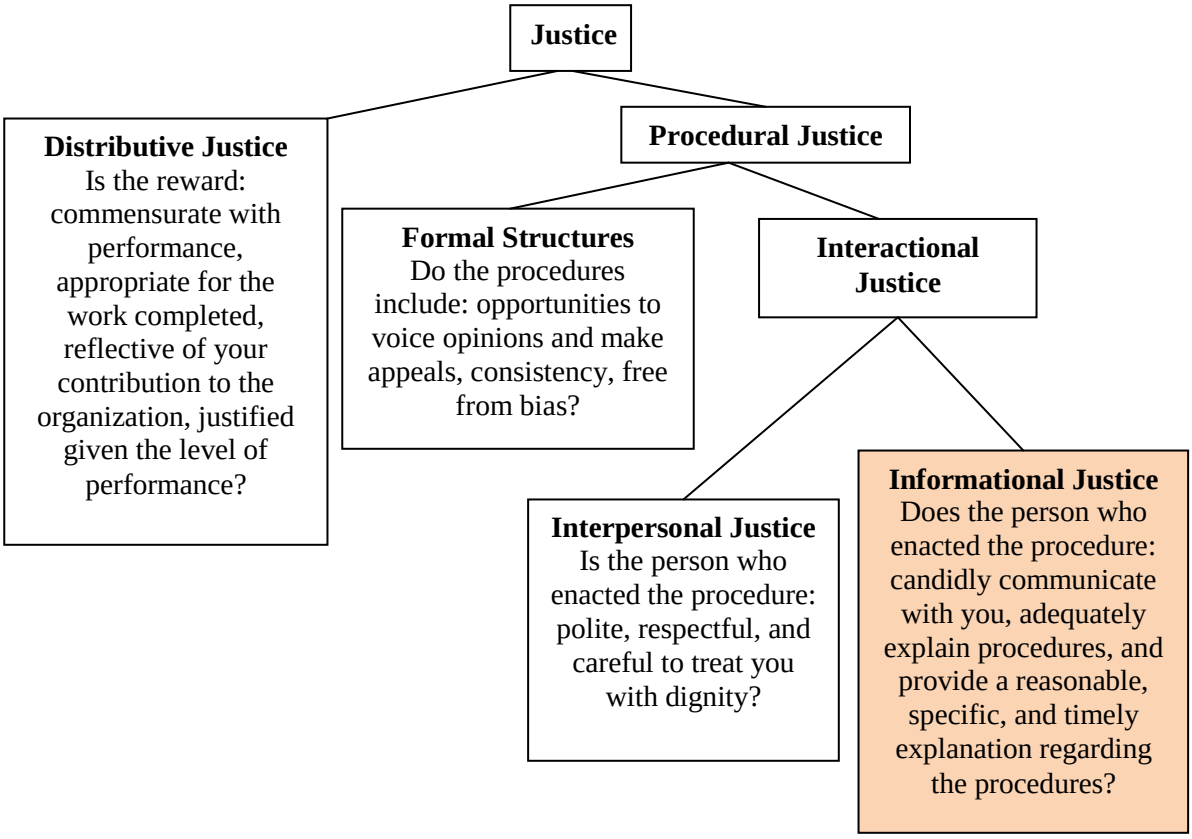


Figure B2

Relationship Between Firm Revenue and Effort Allocation

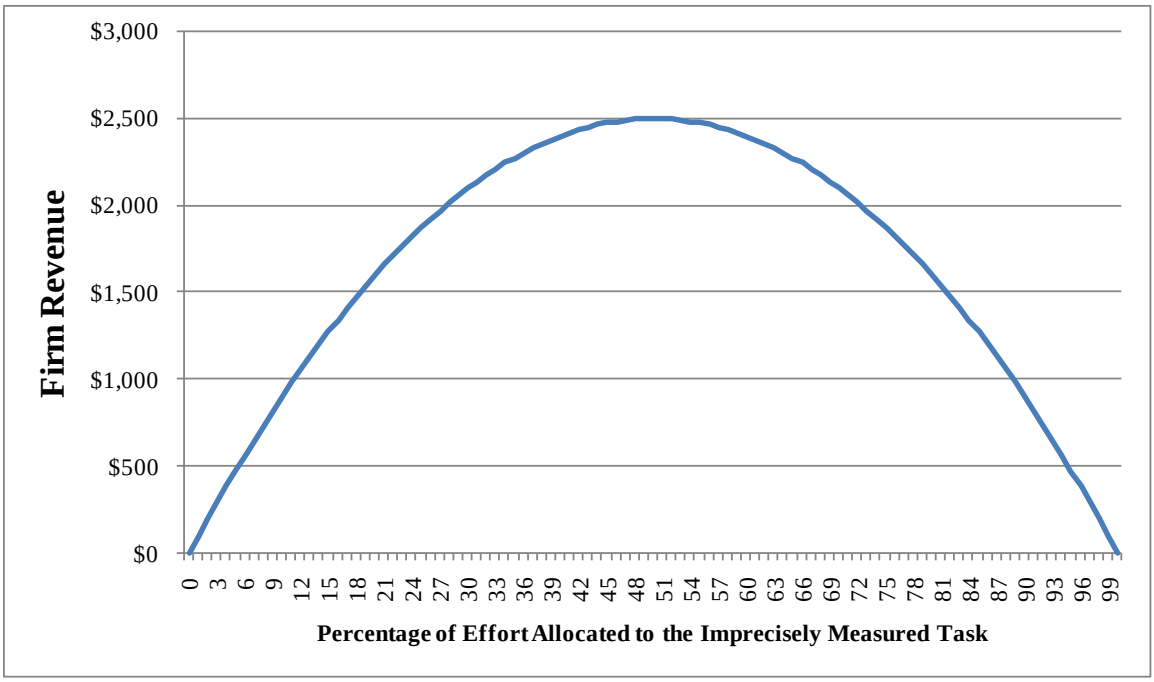


Figure B3

Path Diagram of Hypotheses

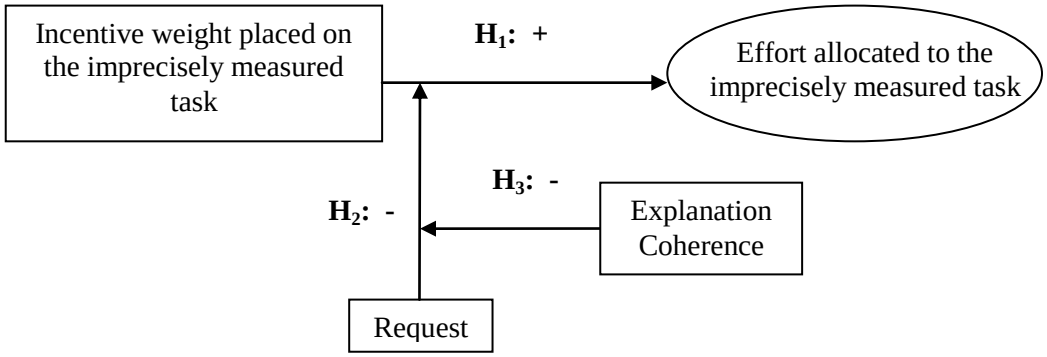


Figure B4

Graphical Representation of Hypotheses

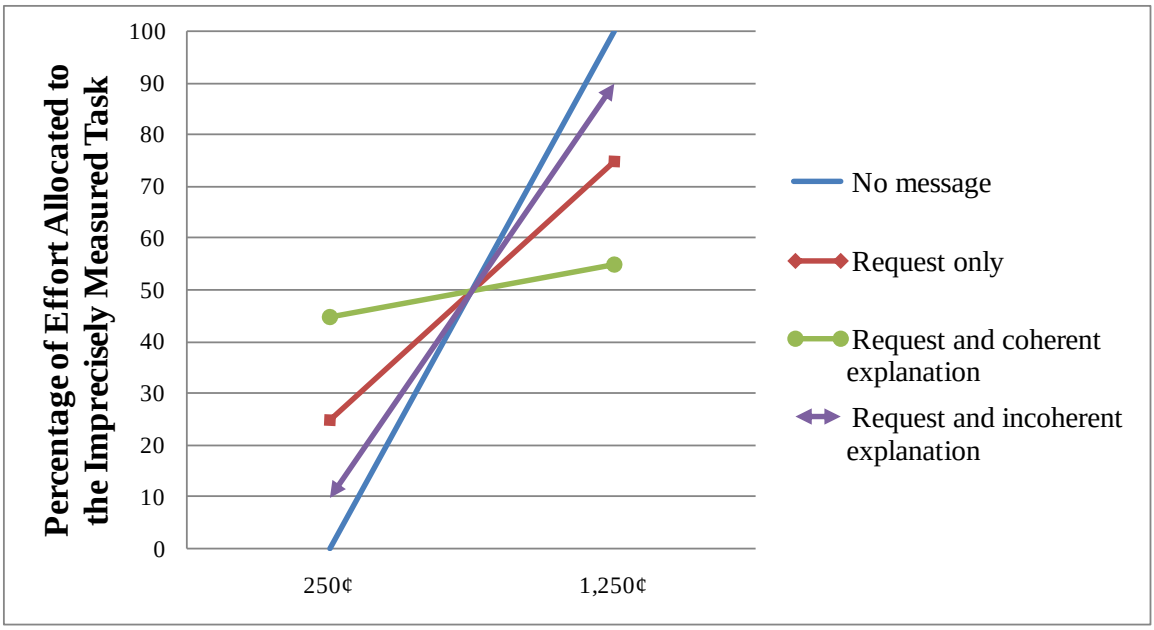
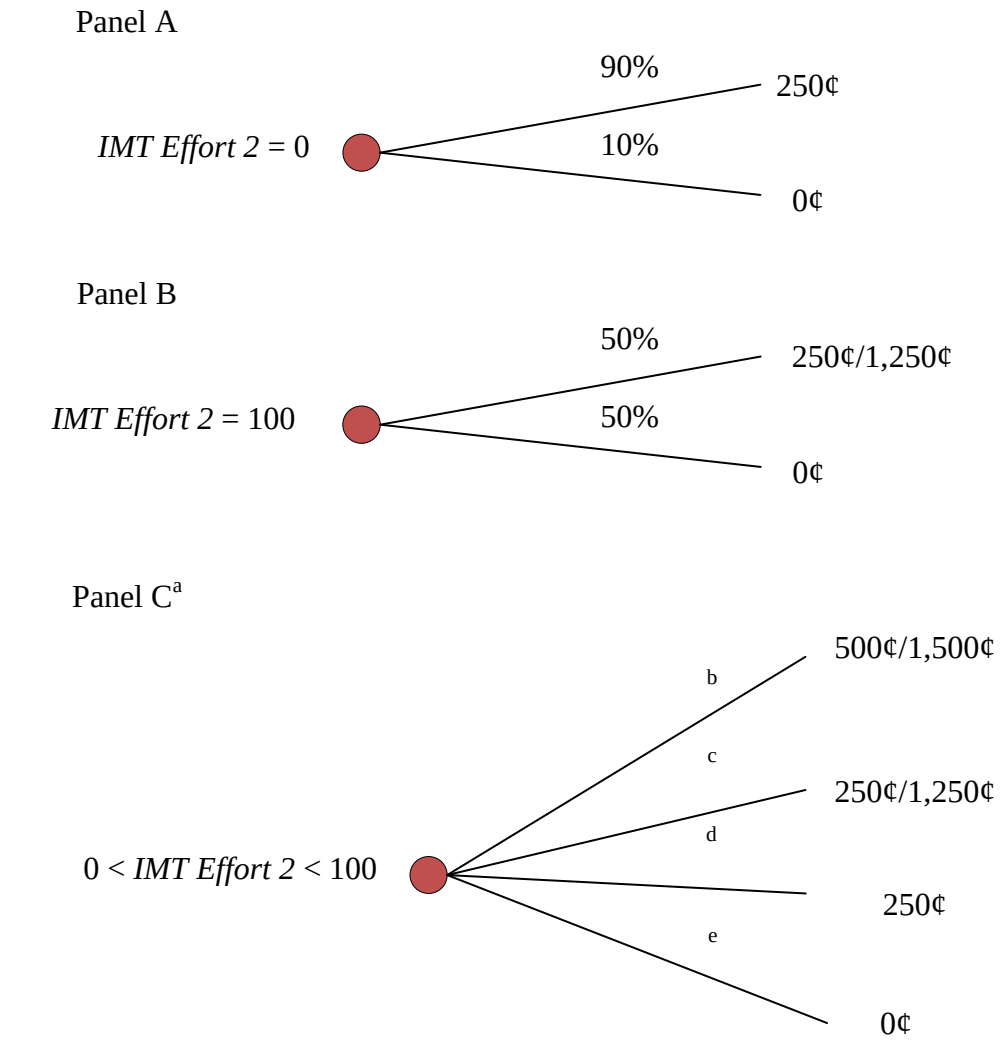


Figure B5

Three Possible Gambles



[a] In the probability equations below, $0 < \alpha < 100$ and represents the effort allocated to the imprecisely measured task

[b] $(.005 * \alpha) * [.009 * (100 - \alpha)]$

[c] $(.005 * \alpha) * [(\alpha * .01) + (1 - \alpha) * .001]$

[d] $[.009 * (100 - \alpha)] * [((100 - \alpha) * .01) + (.005 * \alpha)]$

[e] $[(.005 * \alpha) + ((100 - \alpha) * .01)] * [(.001 * (100 - \alpha)) + (\alpha * .01)]$

Figure B6

Screen Shot of the Allocation Task

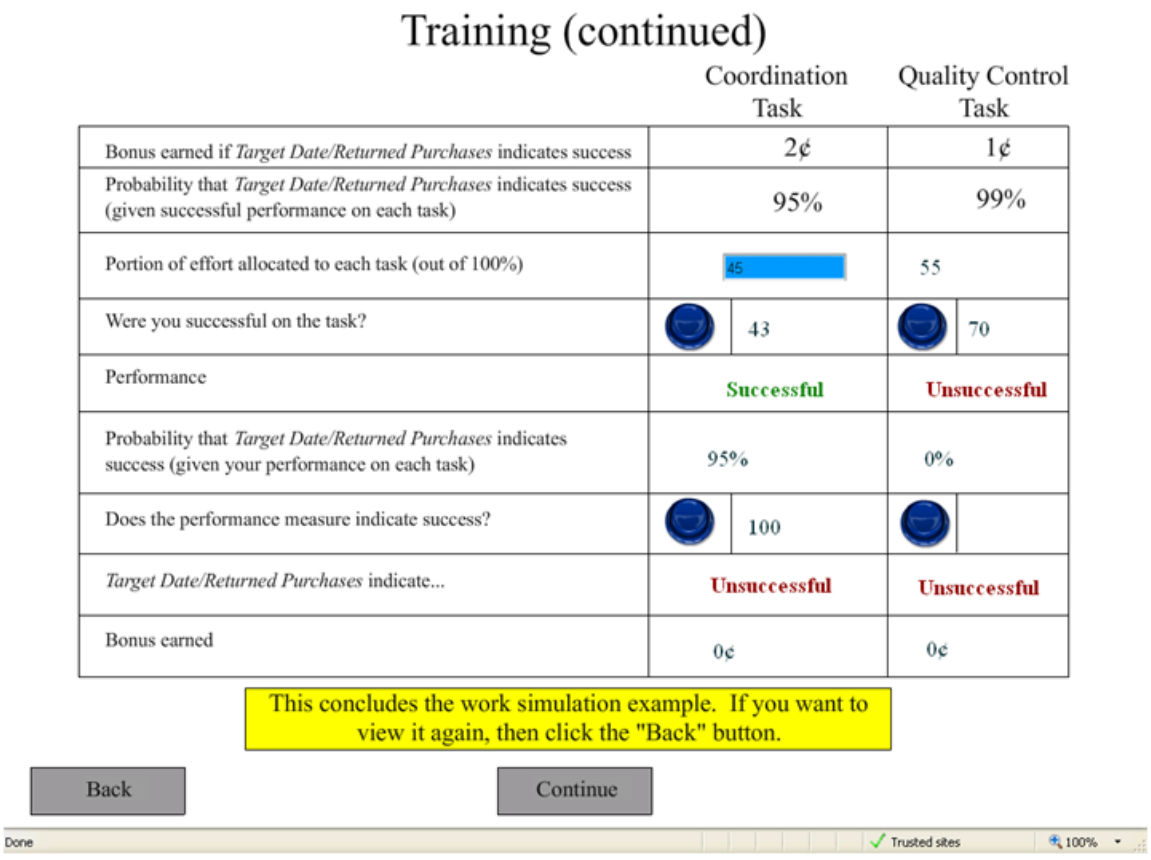


Figure B7

Experimental Results: Mean of Imprecisely Measured Task During Work Session Two (*IMT Effort 2*) in Each Experimental Condition

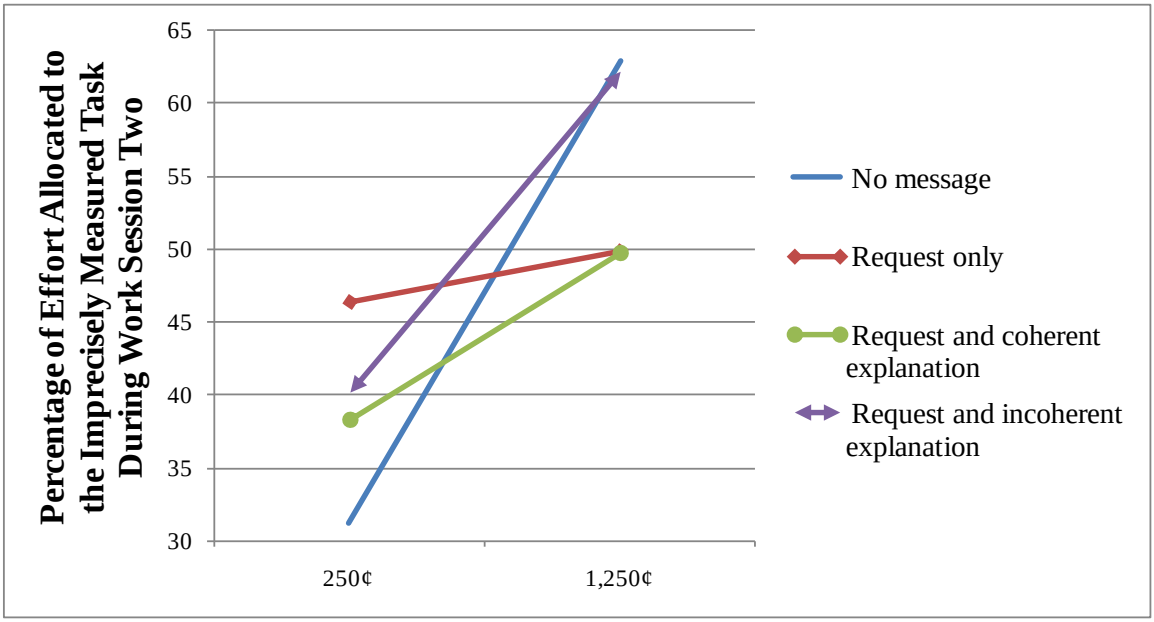


Figure B8 Distribution of Effort Allocation Decisions During Work Session Two (*IMT Effort 2*) in Each Experimental Condition

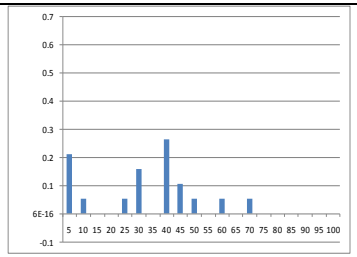
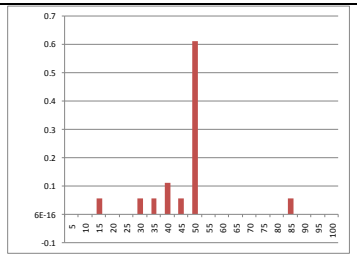
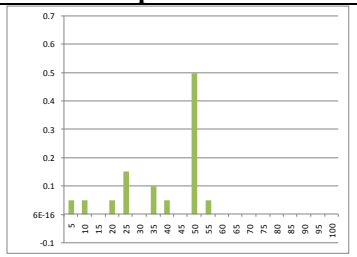
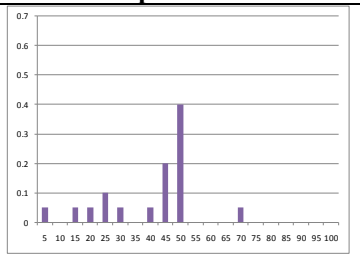
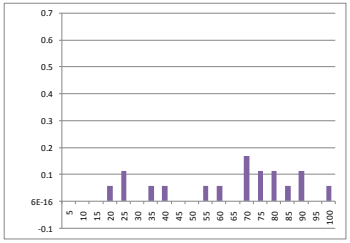
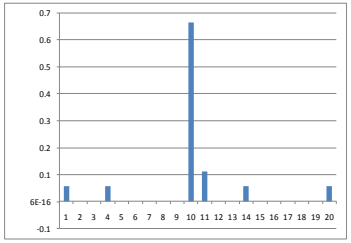
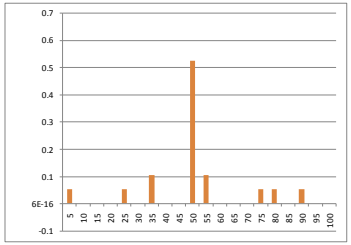
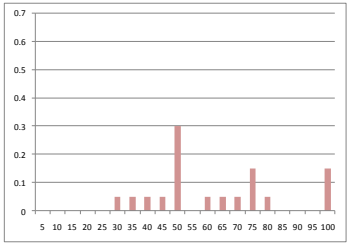
	No Message	**Request Only**	**Request and Coherent Explanation**	**Request and Incoherent Explanation**
250¢ Bonus				
1,250¢ Bonus				

Figure B9

Experimental Results: Mean Imprecisely Measured Task During Work Session One (*IMT Effort 1*) in Each Experimental Condition

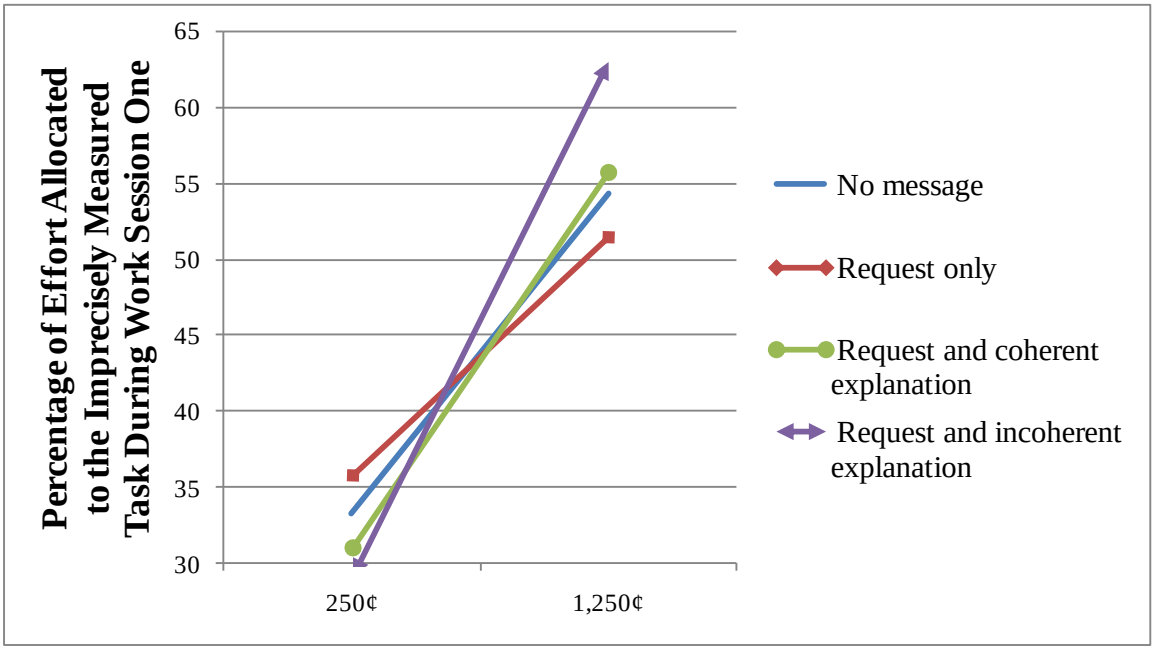


Figure B10 Distribution of Effort Allocation Decisions During Work Session Two (*IMT Effort 1*) in Each Experimental Condition

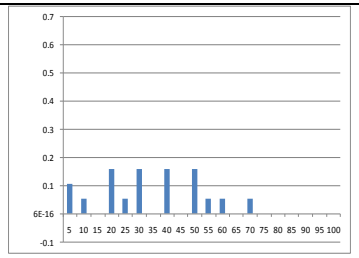
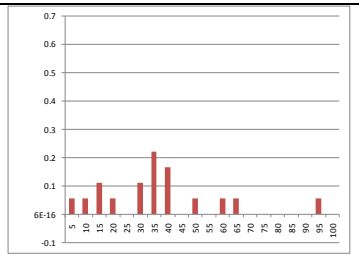
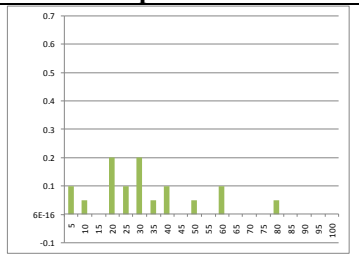
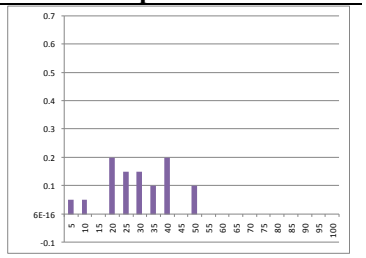
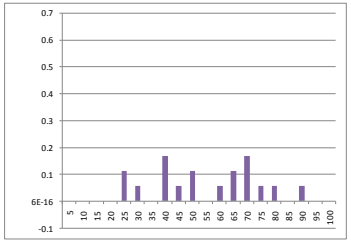
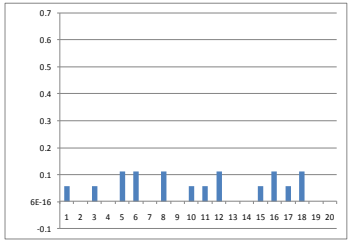
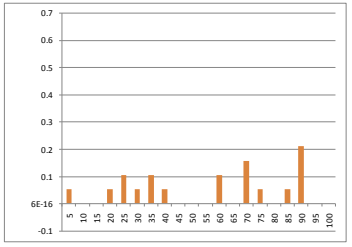
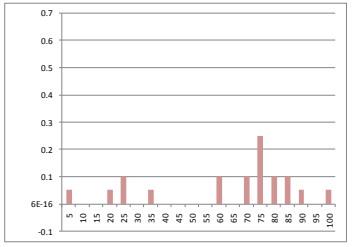
	No Message	Request Only	Request and Coherent Explanation	Request and Incoherent Explanation
250¢ Bonus				
1,250¢ Bonus				

Figure B11

Experimental Results: Mean Deviation from a 50/50 Allocation of Effort during Work Session Two (*Abs. Dev. 2*) in Each Experimental Condition

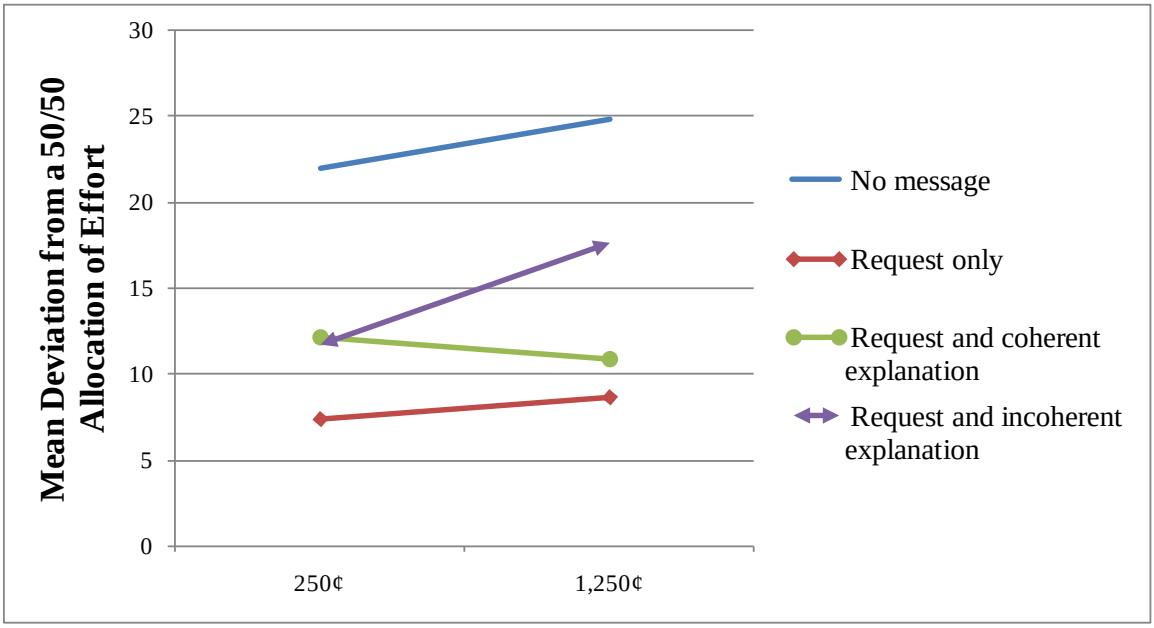
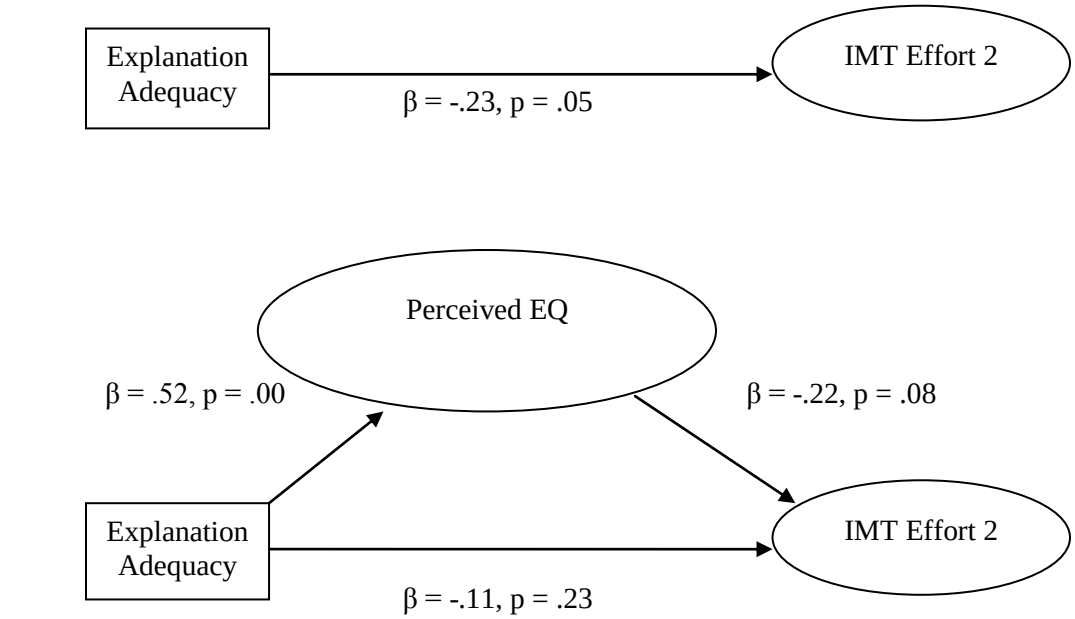


Figure B12

Path Diagram of Mediation Analysis Results for the 1,250¢ Condition



Variable Definitions:

Explanation Coherence = 0 for the RIE condition and 1 for the RCE condition.

Perceived EQ = Factor score of the perceived reasonableness and completeness of the explanation.

IMT Effort 2 = Amount of effort allocated to the imprecisely measured task during the second work session.

Figure B13

Experimental Results: Mean Bonus Earned During Work Session Two (*Earnings 2*) in Each Experimental Condition

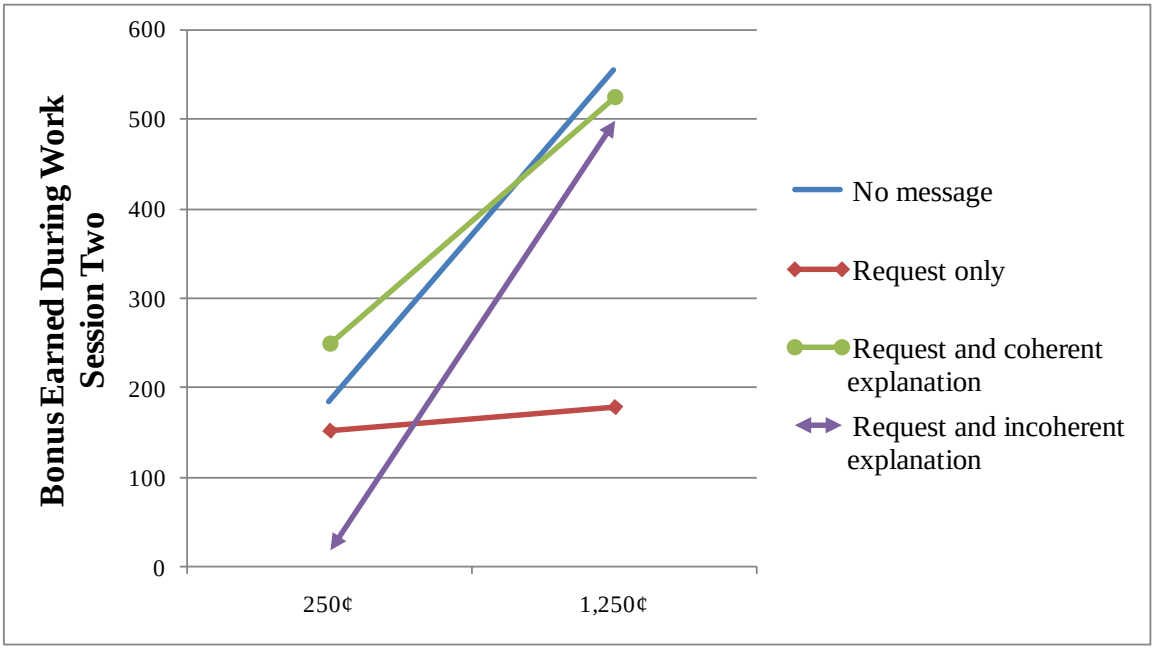


Figure B14

Experimental Results: Mean Perceived Justifiability of Bonuses Offered During Work Session Two (*Just Bonus 2*) in Each Experimental Condition

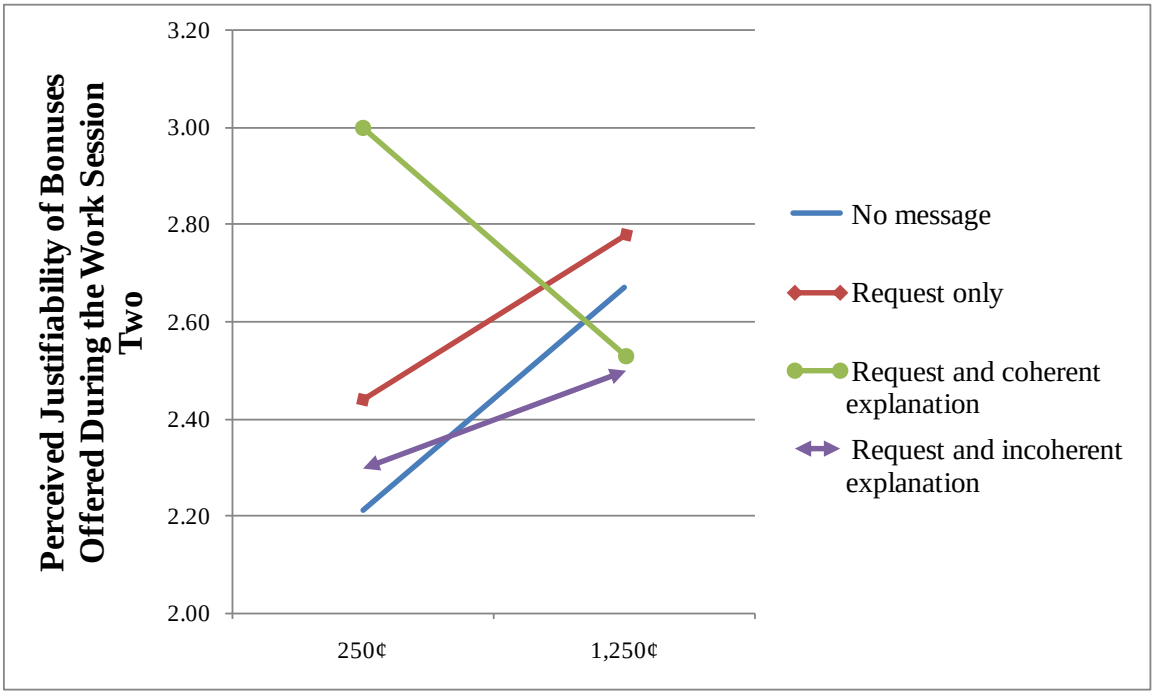


Figure B15 Distribution of Effort Allocations During Work Session One (*IMT Effort 1*) in the 10 Percent Condition

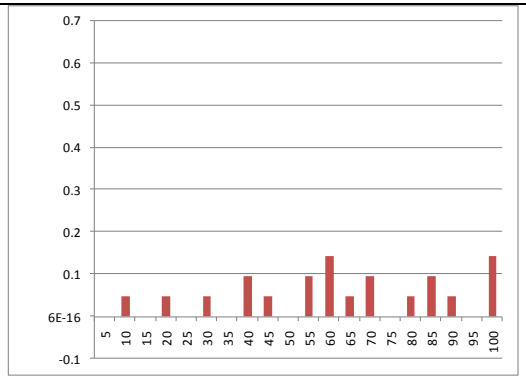
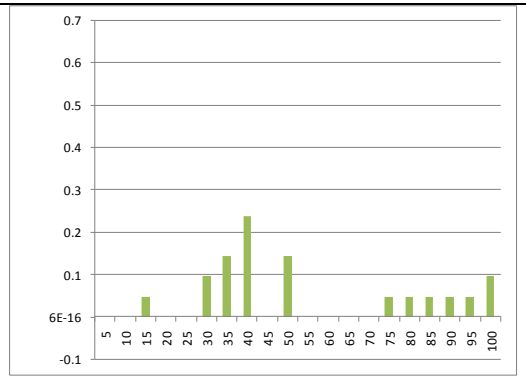
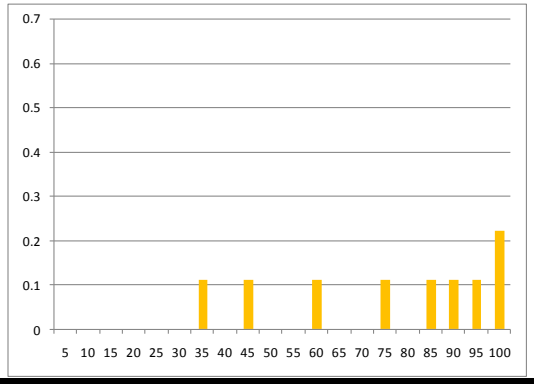
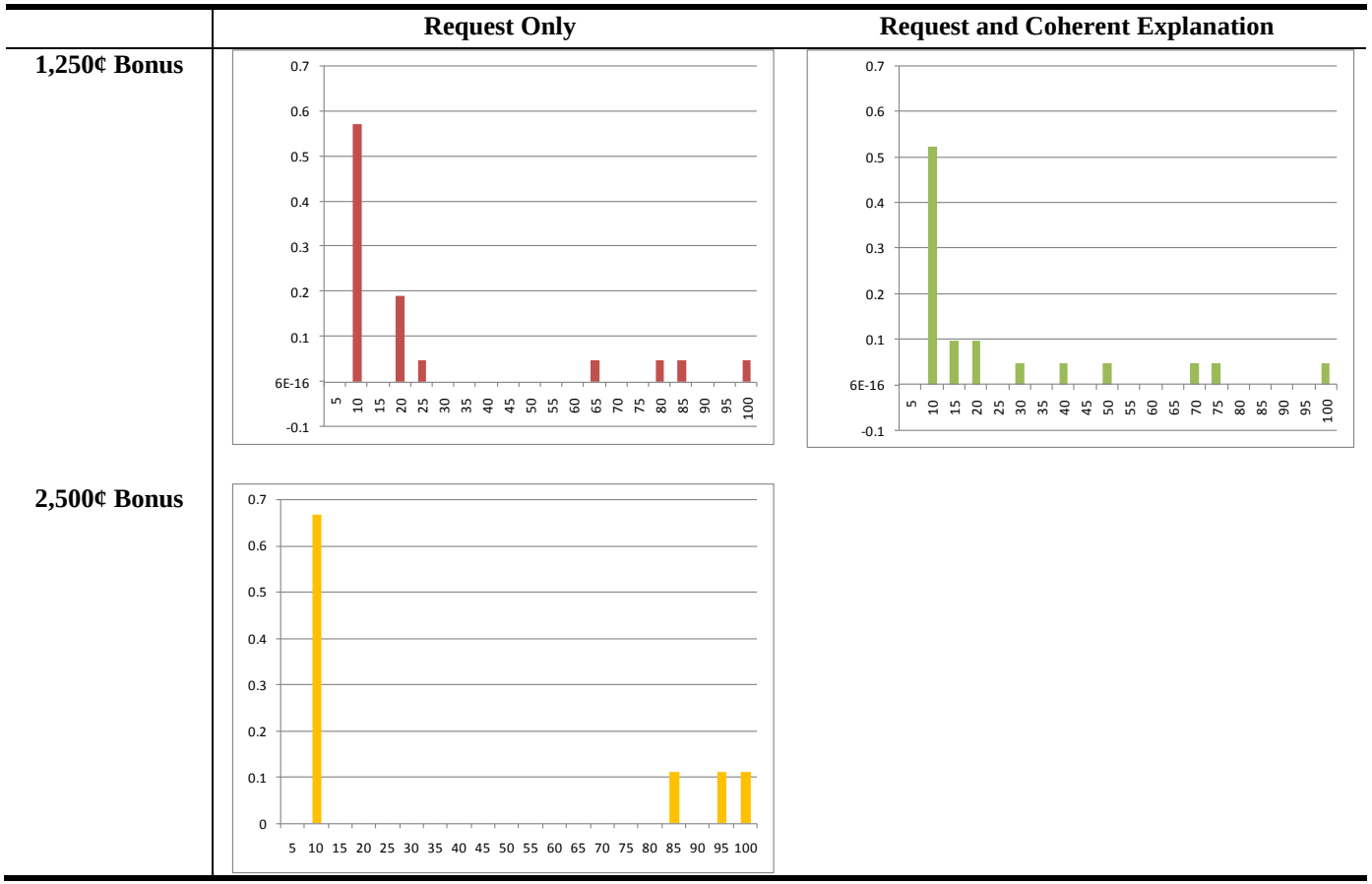
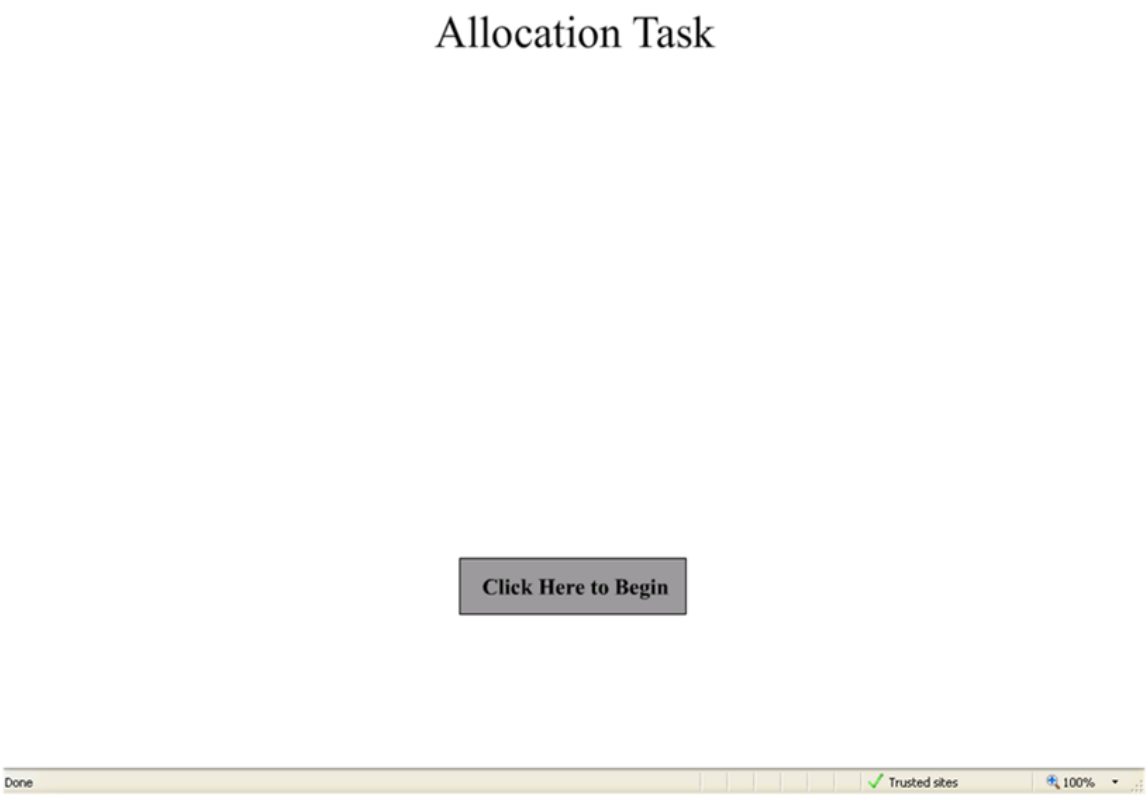
	Request Only	**Request and Coherent Explanation**
1,250¢ Bonus		
2,500¢ Bonus		

Figure B16 Distribution of Effort Allocations During Work Session Two (*IMT Effort 2*) in the 10 Percent Condition



APPENDIX C

SCREEN PRINTS OF EXPERIMENTAL INSTRUMENT

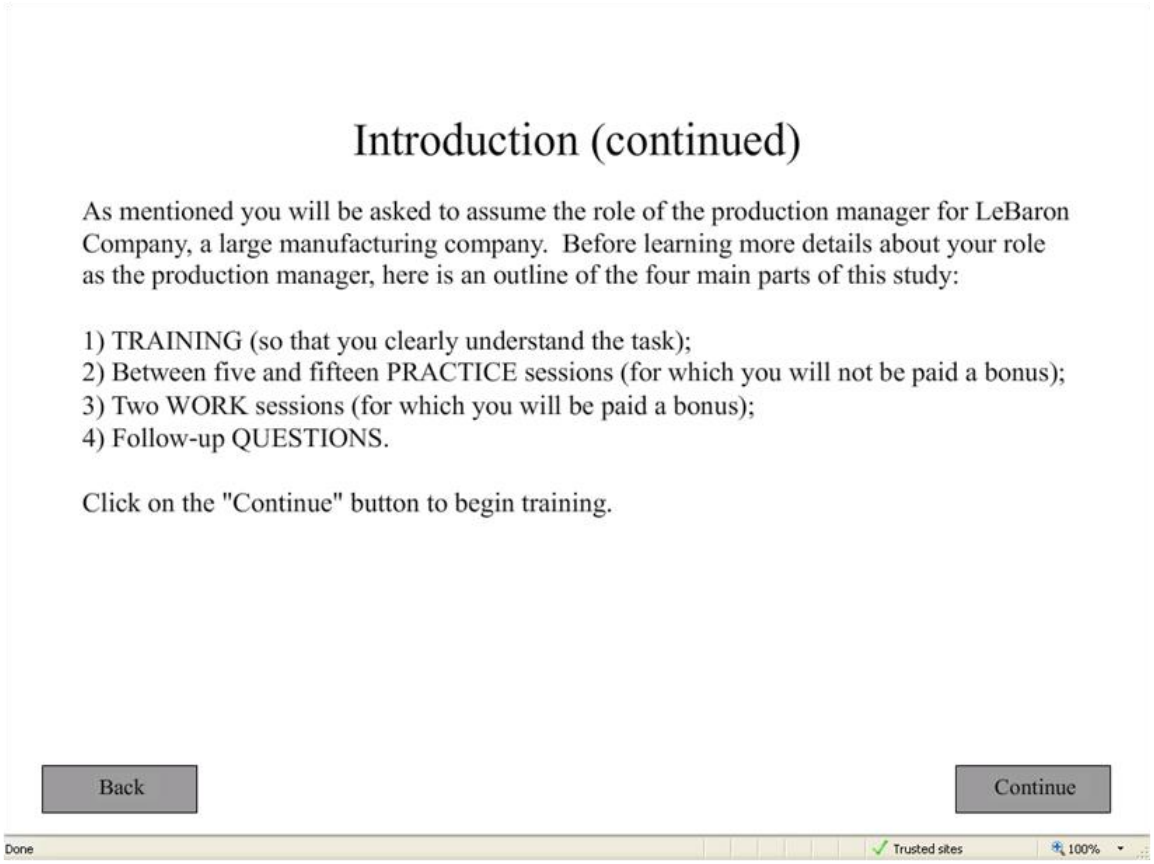


Introduction

The purpose of this study is to examine decisions that people make in real work settings. During this study you will play the role of LeBaron Company's production manager.

You will be paid in cash at the end of this study. You are guaranteed to earn $5 just for participating. In addition to the $5 participation fee, you will have the opportunity to earn additional money based on your decisions. All money is denoted in terms of cents. Therefore, if you earn 1,000¢ from your decisions, you will be paid $10 plus the $5 participation fee.

Continue


Introduction (continued)
As mentioned you will be asked to assume the role of the production manager for LeBaron Company, a large manufacturing company. Before learning more details about your role as the production manager, here is an outline of the four main parts of this study:
1) TRAINING (so that you clearly understand the task);
2) Between five and fifteen PRACTICE sessions (for which you will not be paid a bonus);
3) Two WORK sessions (for which you will be paid a bonus);
4) Follow-up QUESTIONS.
Click on the "Continue" button to begin training.
Back
Continue
Done
Trusted sites
100%

Training

Congratulations! You have just been hired to be the new production manager for LeBaron Company.

The next several screens will give you more information about LeBaron Company, and your job as the production manager.

Training (continued)

Below is an excerpt from the LeBaron Company's website that describes its business:

About Us

LeBaron Company

Men's Wear

LeBaron Company manufactures and sells men's attire to stores all across the globe. LeBaron Company has been in business for the last 50 years, and is considered to be one of the most competitive business attire manufacturers in North America. LeBaron Company employs approximately 4000 people in 8 manufacturing plants and 20 offices located across the USA, Canada, India, and Germany. Showing profits consistently, LeBaron Company has a significant, stable and growing export business.

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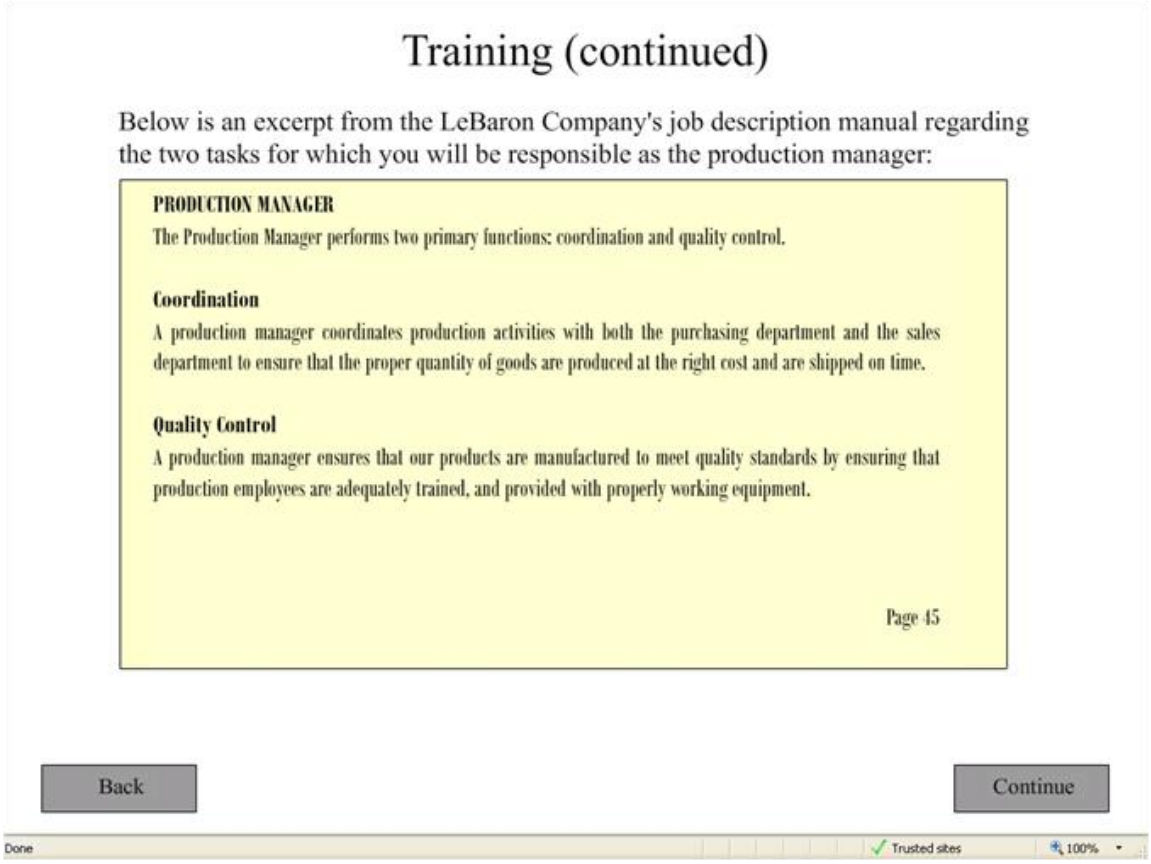
Training (continued)
Below is an excerpt from the LeBaron Company's job description manual regarding the two tasks for which you will be responsible as the production manager:
PRODUCTION MANAGER
The Production Manager performs two primary functions: coordination and quality control.
Coordination
A production manager coordinates production activities with both the purchasing department and the sales department to ensure that the proper quantity of goods are produced at the right cost and are shipped on time.
Quality Control
A production manager ensures that our products are manufactured to meet quality standards by ensuring that production employees are adequately trained, and provided with properly working equipment.
Page 45
Back
Continue
Done
Trusted sites
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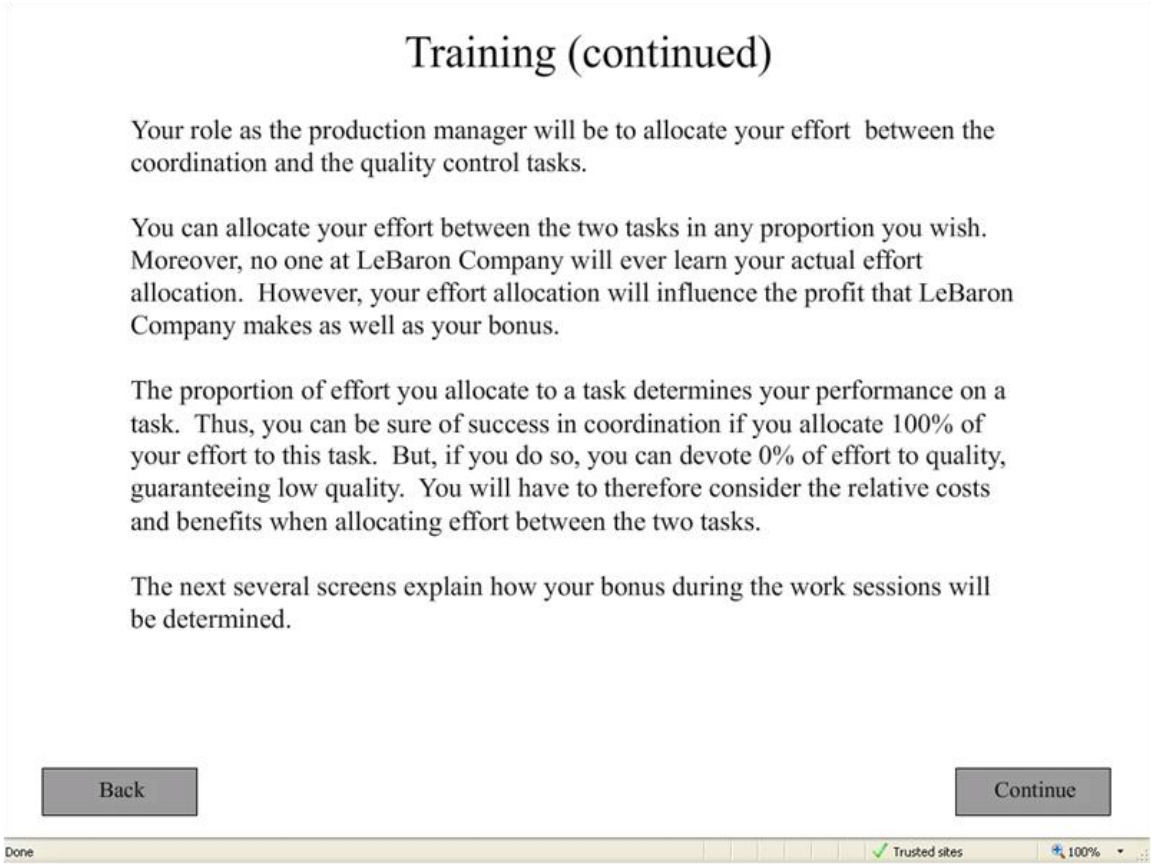
Training (continued)
Your role as the production manager will be to allocate your effort between the coordination and the quality control tasks.
You can allocate your effort between the two tasks in any proportion you wish. Moreover, no one at LeBaron Company will ever learn your actual effort allocation. However, your effort allocation will influence the profit that LeBaron Company makes as well as your bonus.
The proportion of effort you allocate to a task determines your performance on a task. Thus, you can be sure of success in coordination if you allocate 100% of your effort to this task. But, if you do so, you can devote 0% of effort to quality, guaranteeing low quality. You will have to therefore consider the relative costs and benefits when allocating effort between the two tasks.
The next several screens explain how your bonus during the work sessions will be determined.
Back
Continue
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Trusted sites
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Training (continued)

Often, we cannot observe performance on a task. Instead, we can only observe a performance measure that is correlated with performance.

For example, by studying hard (effort), you might have learned a topic very well (successful performance). However, your instructor cannot directly observe the extent of your learning. Rather, the instructor uses your exam score (a performance measure) to infer how much you have learned.

Similarly, LeBaron Company cannot directly observe the performance on the coordination and quality tasks. Thus, LeBaron Company uses the performance measures identified below to evaluate you.

MEASURING THE PERFORMANCE OF PRODUCTION MANAGERS

Coordination Performance Measure: Target Date

The success with which a production manager coordinates activities with the purchasing and sales departments will be measured by whether or not our product is on the shelf by the agreed upon target date (Target Date).

Quality Control: Returned Purchases

The success with which a production manager is able to manufacture clothing that meets the quality standards is measured by the number of purchased items that customers return (Returned Purchases).

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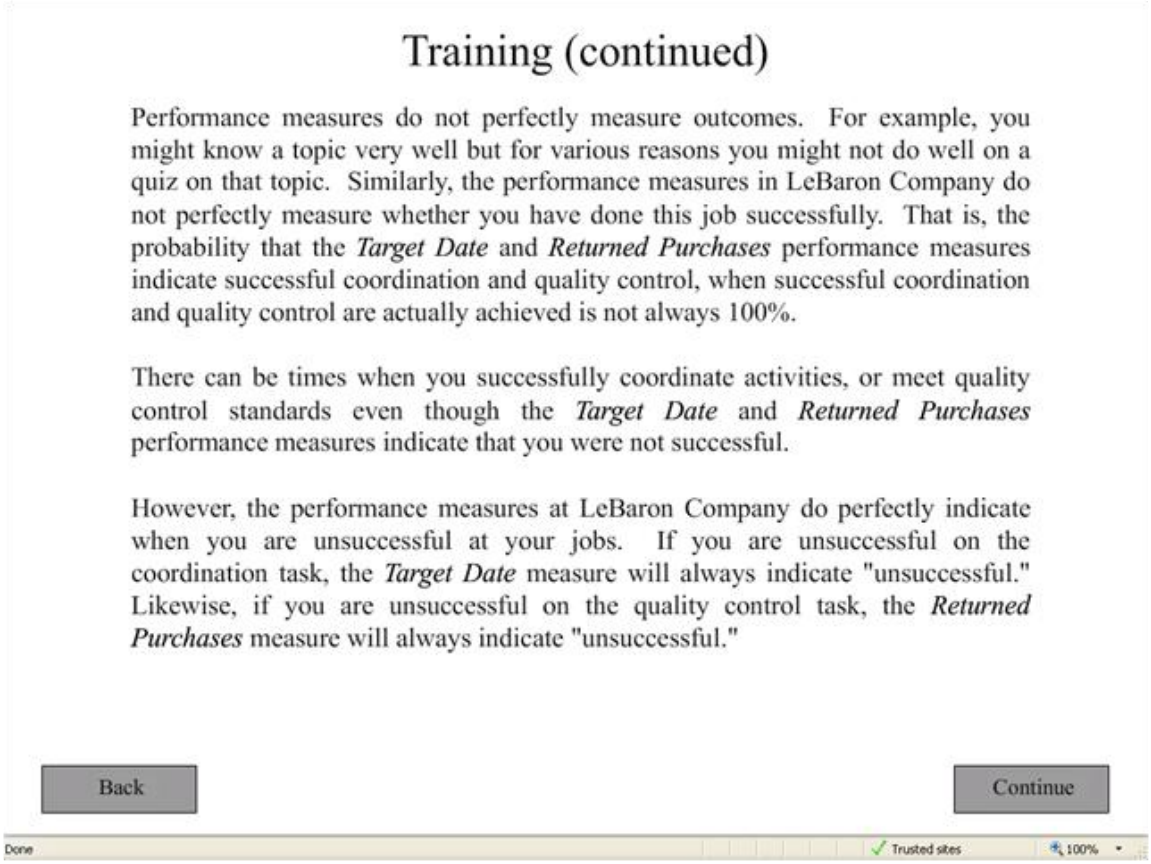
Continue

Training (continued)

Before each work session, a supervisor will offer you a bonus based on the coordination and quality control tasks. Because your supervisors will only observe the *Target Date* and *Returned Purchases* performance measures, you will only receive the bonus if those performance measures indicate that you are successful.


Training (continued)
Performance measures do not perfectly measure outcomes. For example, you might know a topic very well but for various reasons you might not do well on a quiz on that topic. Similarly, the performance measures in LeBaron Company do not perfectly measure whether you have done this job successfully. That is, the probability that the Target Date and Returned Purchases performance measures indicate successful coordination and quality control, when successful coordination and quality control are actually achieved is not always 100%.
There can be times when you successfully coordinate activities, or meet quality control standards even though the Target Date and Returned Purchases performance measures indicate that you were not successful.
However, the performance measures at LeBaron Company do perfectly indicate when you are unsuccessful at your jobs. If you are unsuccessful on the coordination task, the Target Date measure will always indicate "unsuccessful." Likewise, if you are unsuccessful on the quality control task, the Returned Purchases measure will always indicate "unsuccessful."
Back
Continue
Done
Trusted sites
100%

Training (continued)

In sum, the bonus you receive for a task depends on 1) the amount of effort you allocate to a task, and 2) the probability that successful performance is measured correctly.

The relation between the amount of effort allocated to a task, the probability that successful performance is measured correctly, and your reward are simulated on the next screen.


Training (continued)
Coordination Task
Quality Control Task
Bonus earned if *Target Date/Returned Purchases* indicates success
2¢
1¢
Suppose your supervisor offered you a 2¢ bonus if the *Target Date* date performance measure indicates that you successfully coordinated activities.
Continue
Back
Done
Trusted sites
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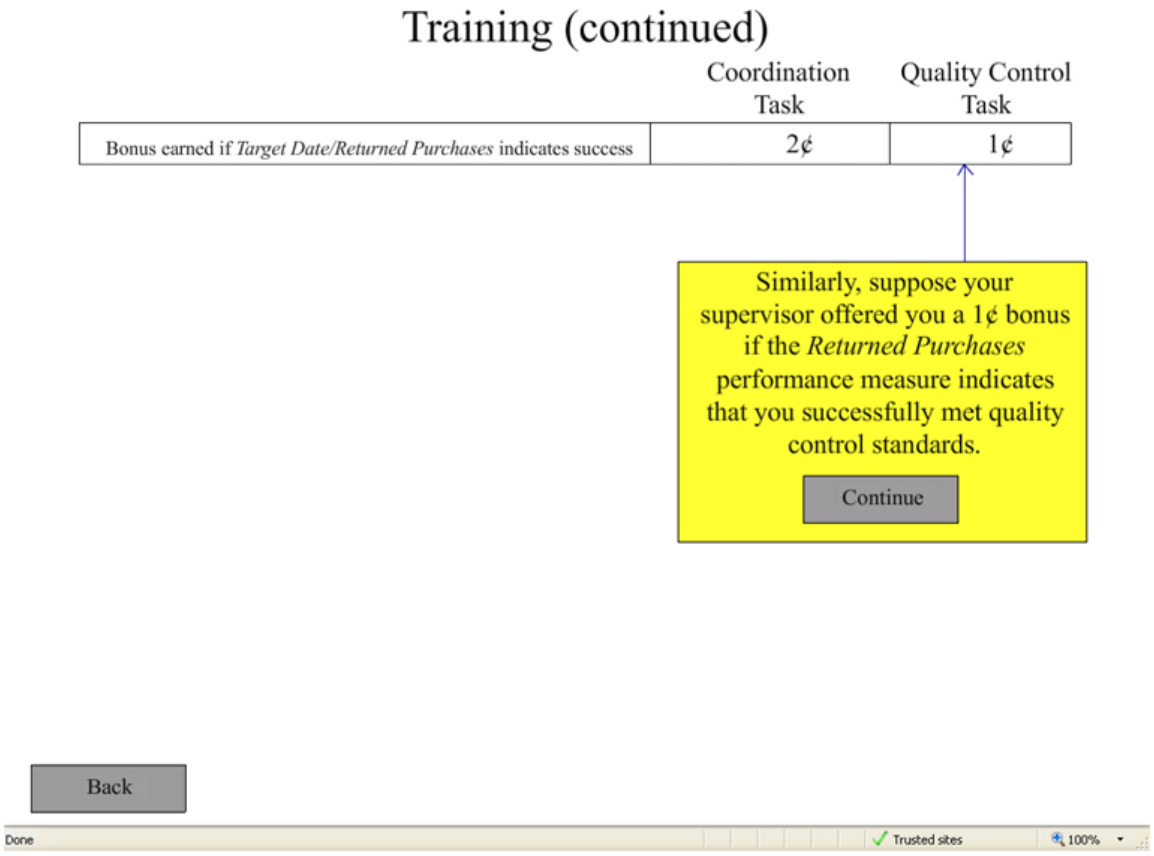
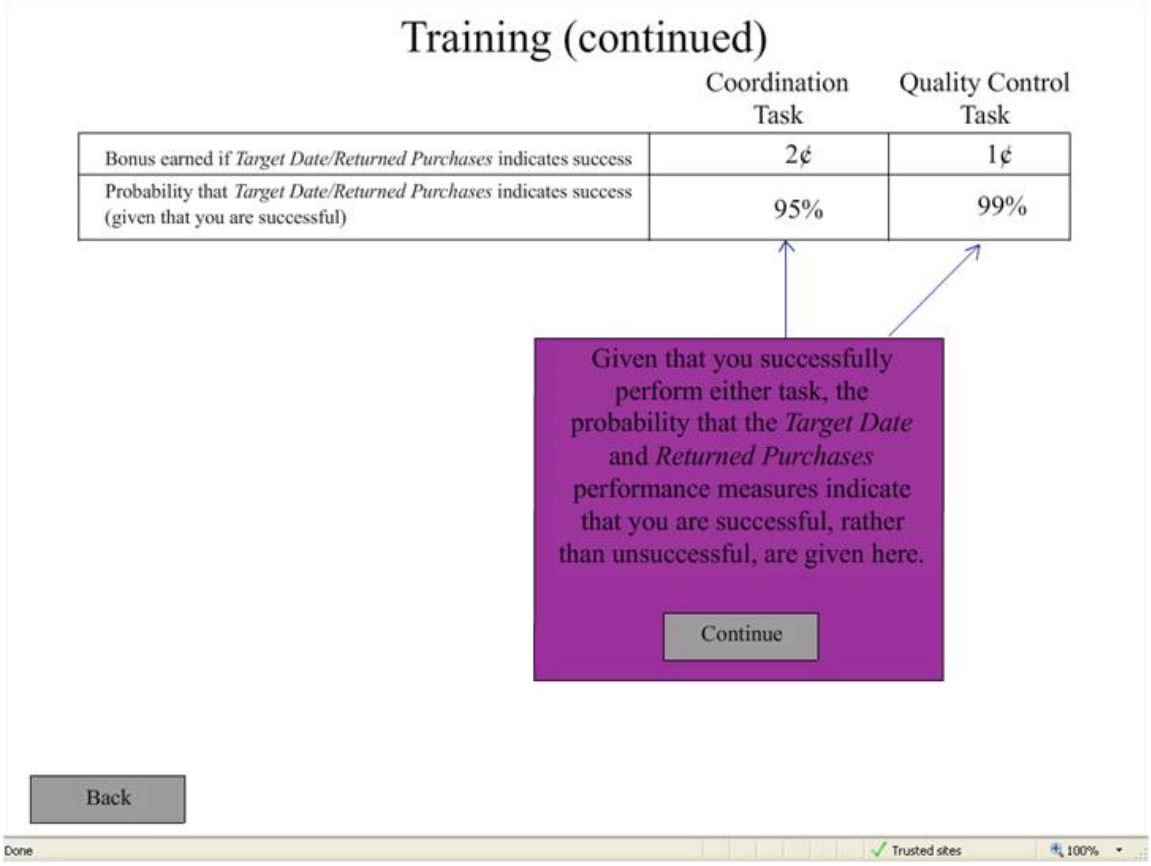
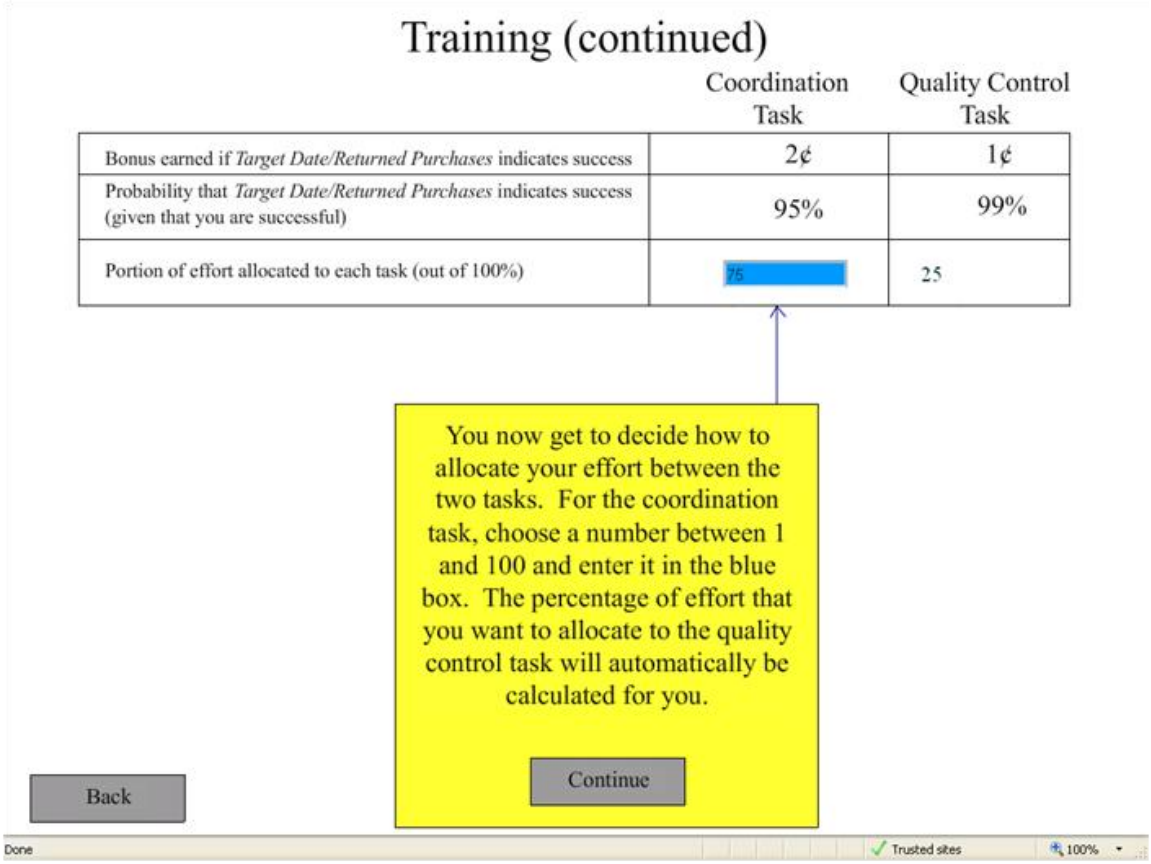
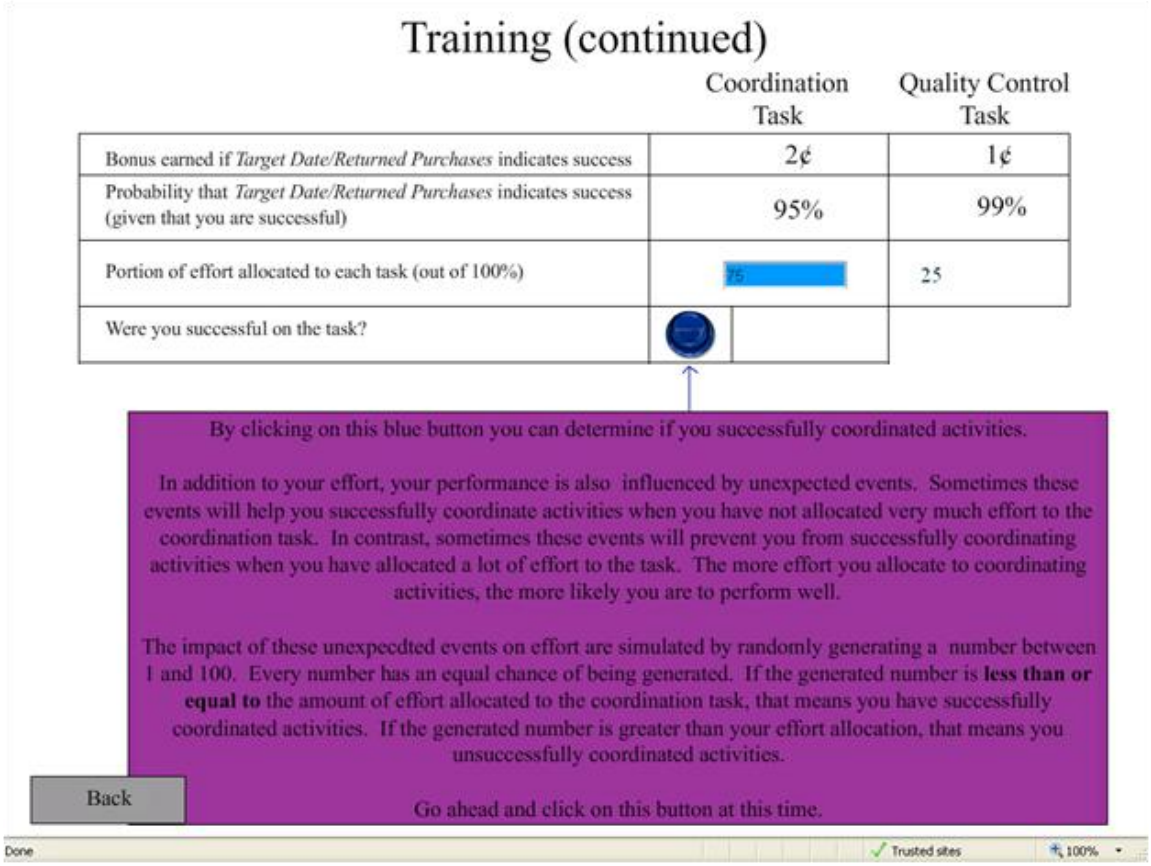
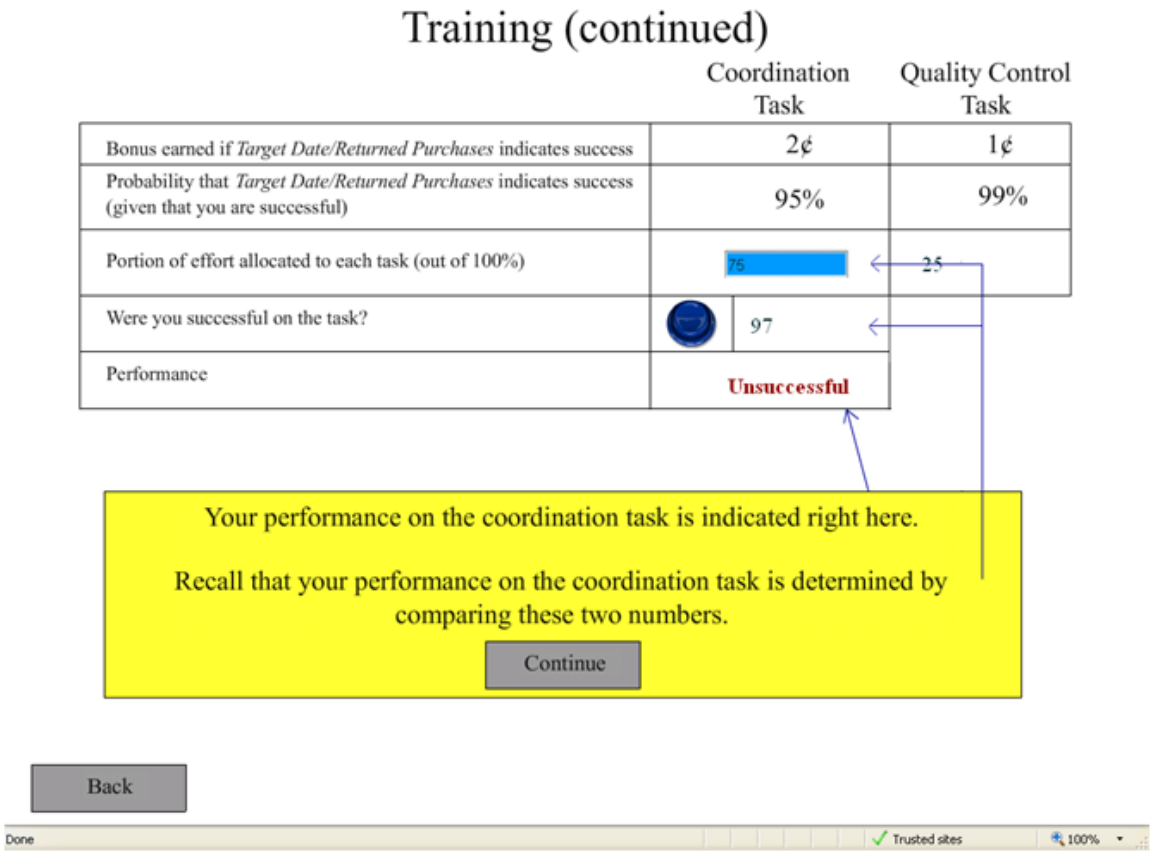

Training (continued)
Coordination Task
Quality Control Task
Bonus earned if *Target Date/Returned Purchases* indicates success
2¢
1¢
Similarly, suppose your supervisor offered you a 1¢ bonus if the *Returned Purchases* performance measure indicates that you successfully met quality control standards.
Continue
Back
Done
Trusted sites
100%

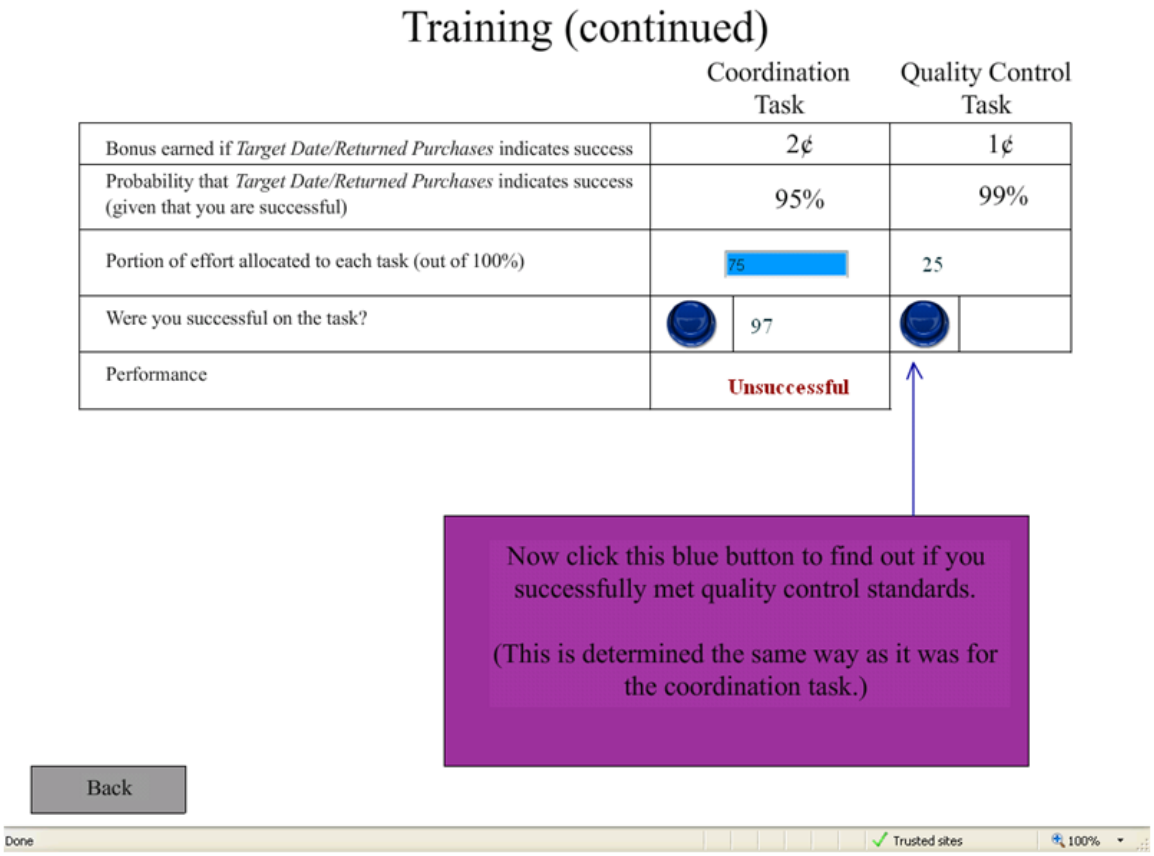

Training (continued)
Coordination Task
Quality Control Task
Bonus earned if Target Date/Returned Purchases indicates success
2¢
1¢
Probability that Target Date/Returned Purchases indicates success (given that you are successful)
95%
99%
Given that you successfully perform either task, the probability that the Target Date and Returned Purchases performance measures indicate that you are successful, rather than unsuccessful, are given here.
Continue
Back
Done
Trusted sites
100%

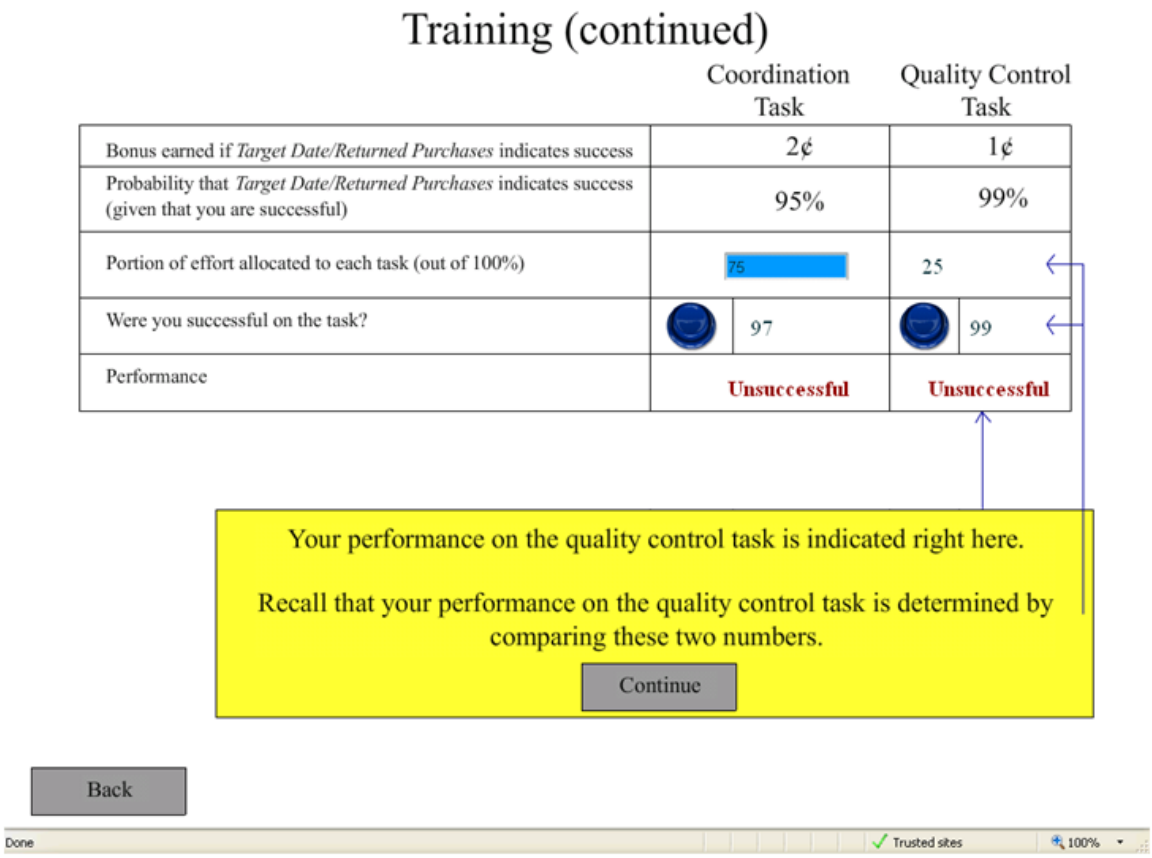

Training (continued)
Coordination Task
Quality Control Task
Bonus earned if Target Date/Returned Purchases indicates success
2¢
1¢
Probability that Target Date/Returned Purchases indicates success (given that you are successful)
95%
99%
Portion of effort allocated to each task (out of 100%)
75
25
You now get to decide how to allocate your effort between the two tasks. For the coordination task, choose a number between 1 and 100 and enter it in the blue box. The percentage of effort that you want to allocate to the quality control task will automatically be calculated for you.
Continue
Back
Done
Trusted sites
100%


Training (continued)
Coordination Task
Quality Control Task
Bonus earned if Target Date/Returned Purchases indicates success
2¢
1¢
Probability that Target Date/Returned Purchases indicates success (given that you are successful)
95%
99%
Portion of effort allocated to each task (out of 100%)
75
25
Were you successful on the task?
By clicking on this blue button you can determine if you successfully coordinated activities.
In addition to your effort, your performance is also influenced by unexpected events. Sometimes these events will help you successfully coordinate activities when you have not allocated very much effort to the coordination task. In contrast, sometimes these events will prevent you from successfully coordinating activities when you have allocated a lot of effort to the task. The more effort you allocate to coordinating activities, the more likely you are to perform well.
The impact of these unexpecdted events on effort are simulated by randomly generating a number between 1 and 100. Every number has an equal chance of being generated. If the generated number is less than or equal to the amount of effort allocated to the coordination task, that means you have successfully coordinated activities. If the generated number is greater than your effort allocation, that means you unsuccessfully coordinated activities.
Go ahead and click on this button at this time.
Back
Done
Trusted sites
100%

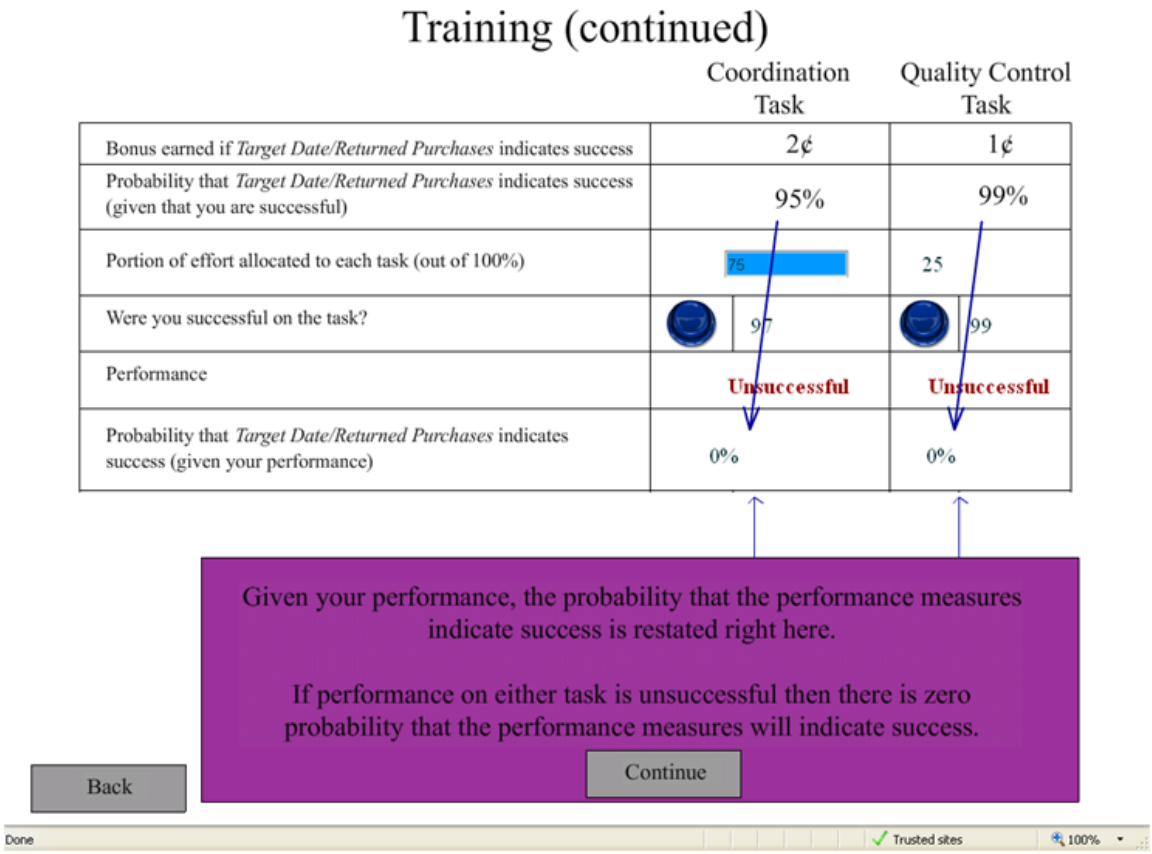


Note: These numbers were randomly generated. Therefore, some outcomes were successful.

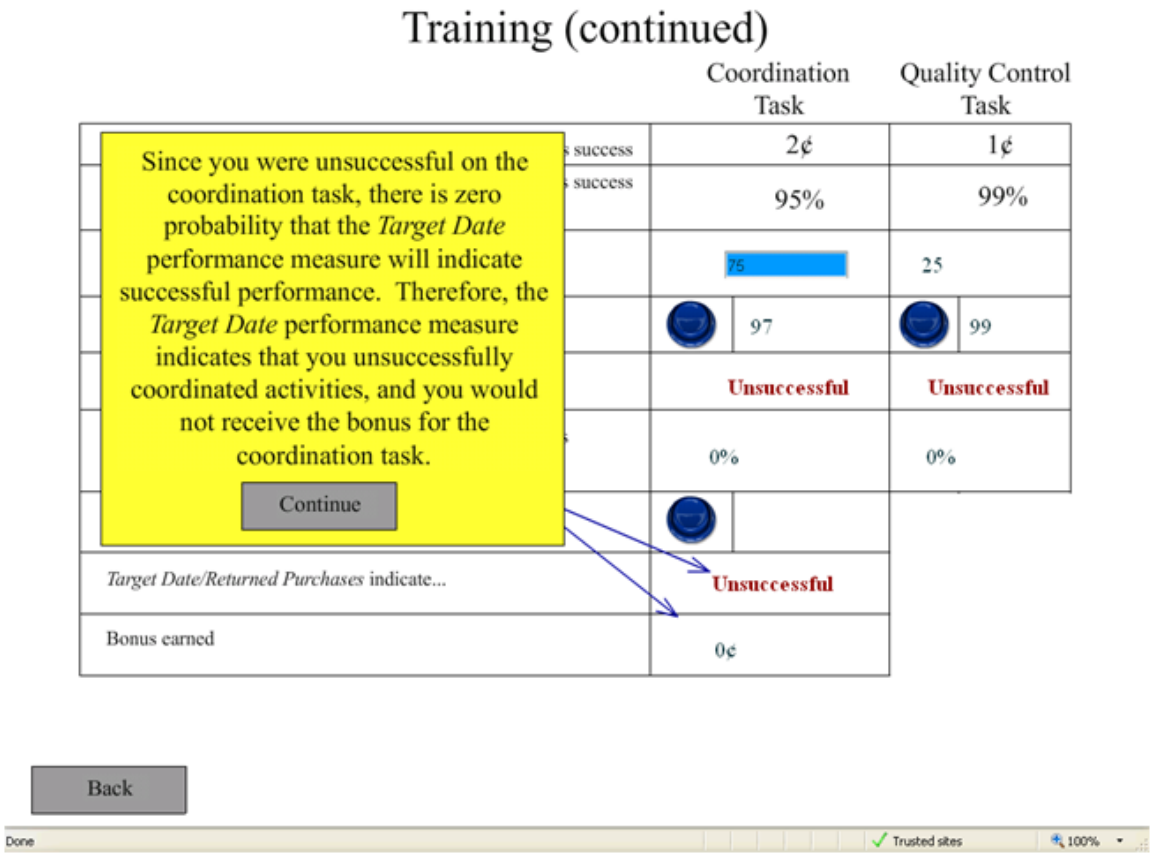

Training (continued)
Coordination Task
Quality Control Task
Bonus earned if Target Date/Returned Purchases indicates success
2¢
1¢
Probability that Target Date/Returned Purchases indicates success (given that you are successful)
95%
99%
Portion of effort allocated to each task (out of 100%)
75
25
Were you successful on the task?
97
Performance
Unsuccessful
Now click this blue button to find out if you successfully met quality control standards.
(This is determined the same way as it was for the coordination task.)
Back
Done
Trusted sites
100%



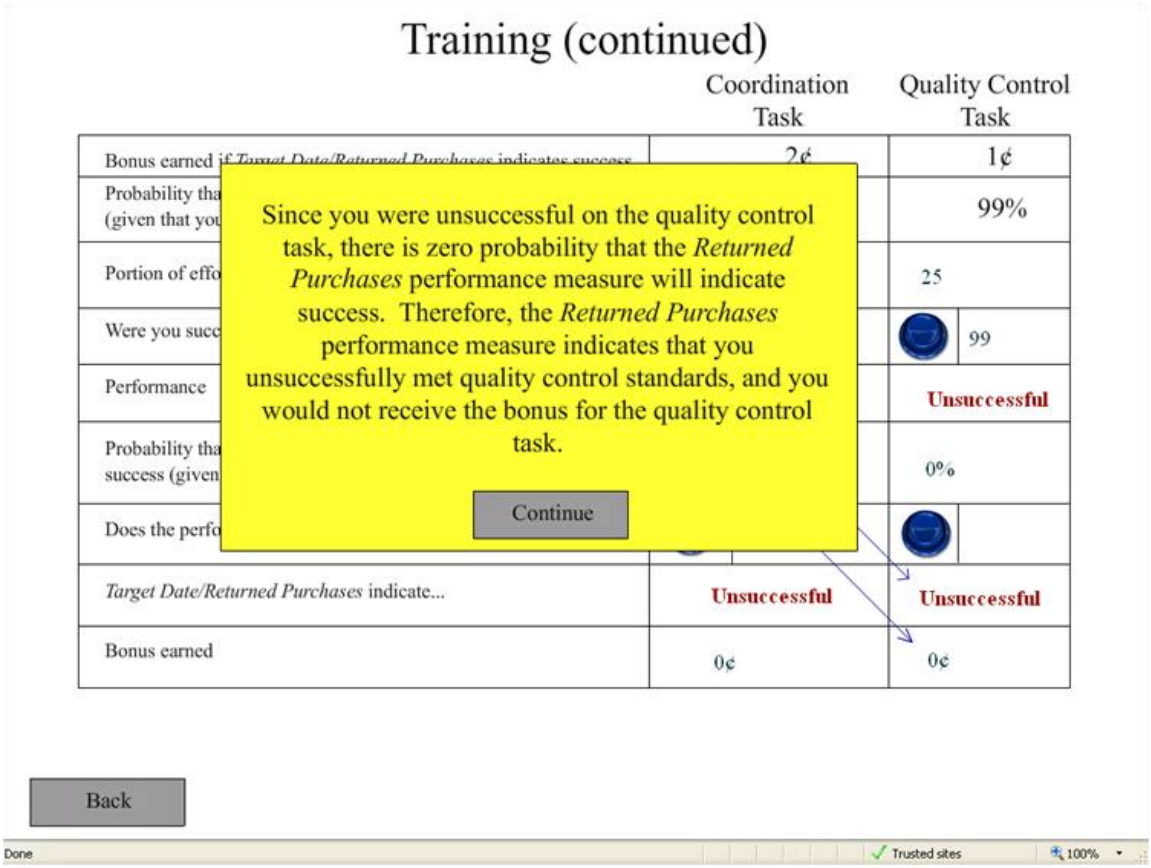
Note: These numbers were randomly generated. Therefore, some outcomes were successful.



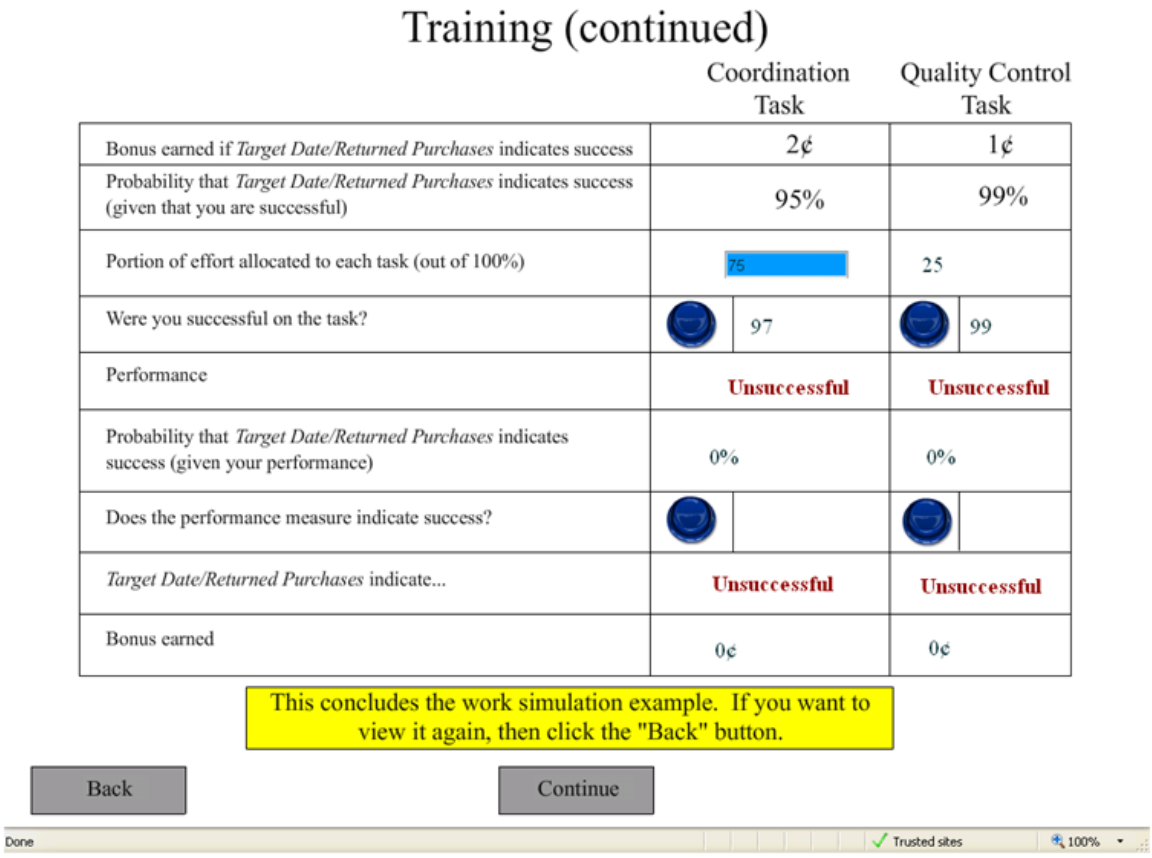
Note: If the outcome of the task was successful, then the probabilities from the second row were reported.

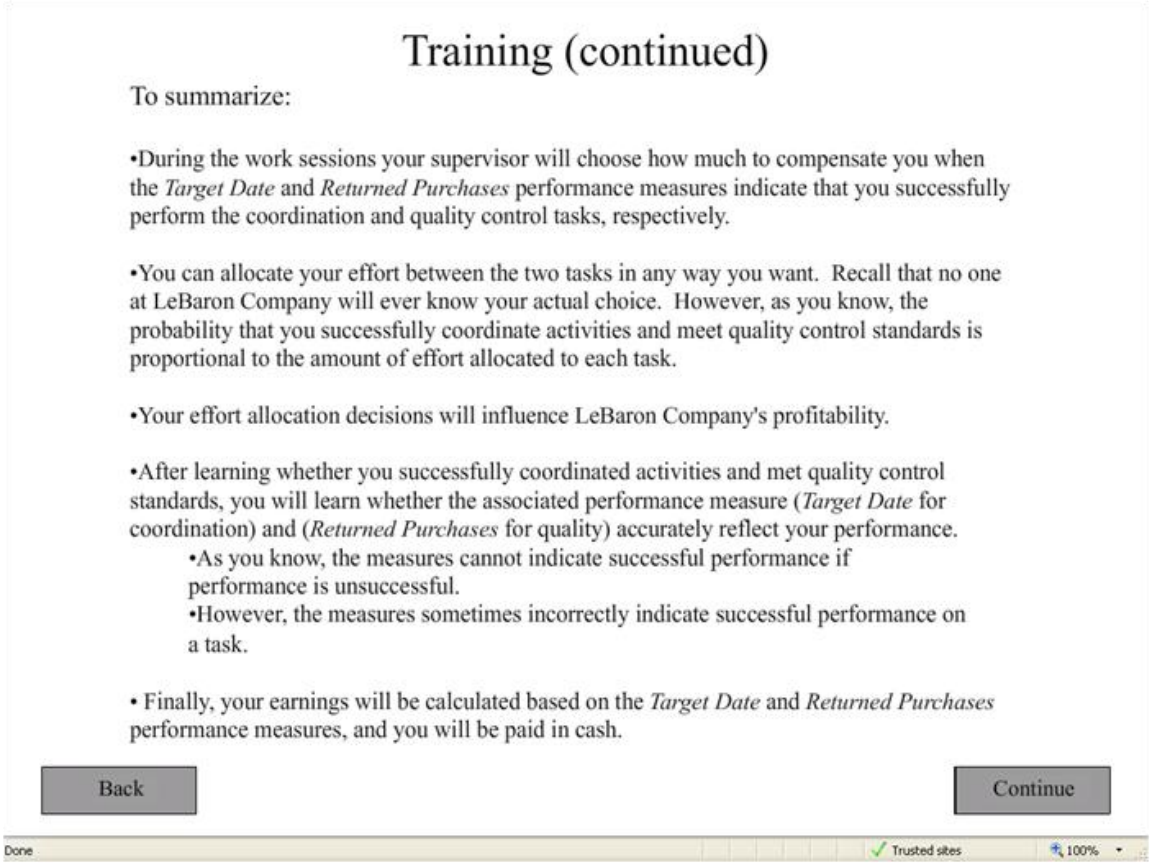


Note: If the outcome of the task was successful then participants were prompted to push the measurement button.



Note: If the outcome of the task was successful then participants were prompted to push the measurement button.


Training (continued)
Coordination Task
Quality Control Task
Bonus earned if Target Date/Returned Purchases indicates success
2¢
1¢
Probability that Target Date/Returned Purchases indicates success (given that you are successful)
95%
99%
Portion of effort allocated to each task (out of 100%)
75
25
Were you successful on the task?
97
99
Performance
Unsuccessful
Unsuccessful
Probability that Target Date/Returned Purchases indicates success (given your performance)
0%
0%
Does the performance measure indicate success?
Target Date/Returned Purchases indicate...
Unsuccessful
Unsuccessful
Bonus earned
0¢
0¢
This concludes the work simulation example. If you want to view it again, then click the "Back" button.
Back
Continue
Done
Trusted sites
100%



Training (continued)

To summarize:

•During the work sessions your supervisor will choose how much to compensate you when the *Target Date* and *Returned Purchases* performance measures indicate that you successfully perform the coordination and quality control tasks, respectively.

•You can allocate your effort between the two tasks in any way you want. Recall that no one at LeBaron Company will ever know your actual choice. However, as you know, the probability that you successfully coordinate activities and meet quality control standards is proportional to the amount of effort allocated to each task.

•Your effort allocation decisions will influence LeBaron Company's profitability.

•After learning whether you successfully coordinated activities and met quality control standards, you will learn whether the associated performance measure (*Target Date* for coordination) and (*Returned Purchases* for quality) accurately reflect your performance.

- •As you know, the measures cannot indicate successful performance if performance is unsuccessful.
- •However, the measures sometimes incorrectly indicate successful performance on a task.

• Finally, your earnings will be calculated based on the *Target Date* and *Returned Purchases* performance measures, and you will be paid in cash.

Back

Continue

Training (continued)

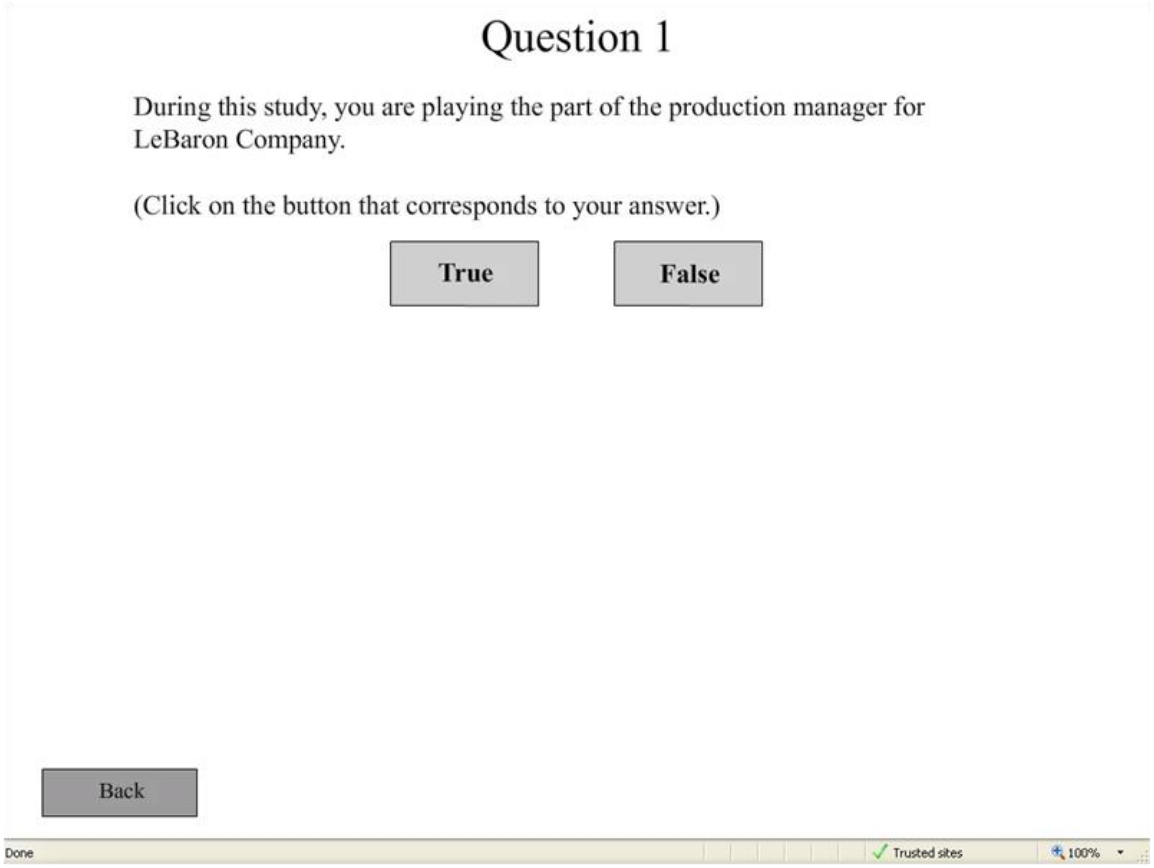
At this time, please remove the "Allocation Task Summary" sheet from your folder.

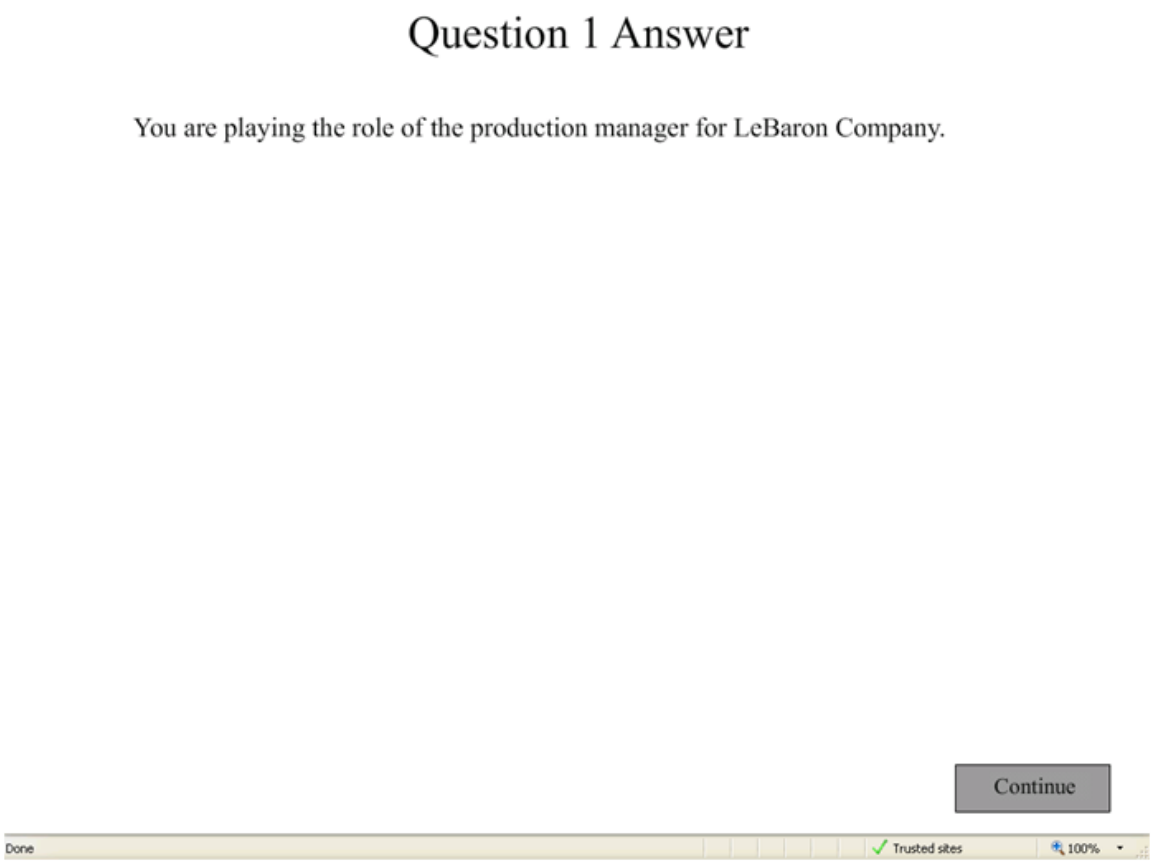
Training (continued)

You must now correctly answer eight questions to verify that you understand the task. If you answer a question incorrectly, additional explanation will be provided. If you cannot find the answer, or if you do not understand the answer, please raise your hand and the experimenter will provide assistance.

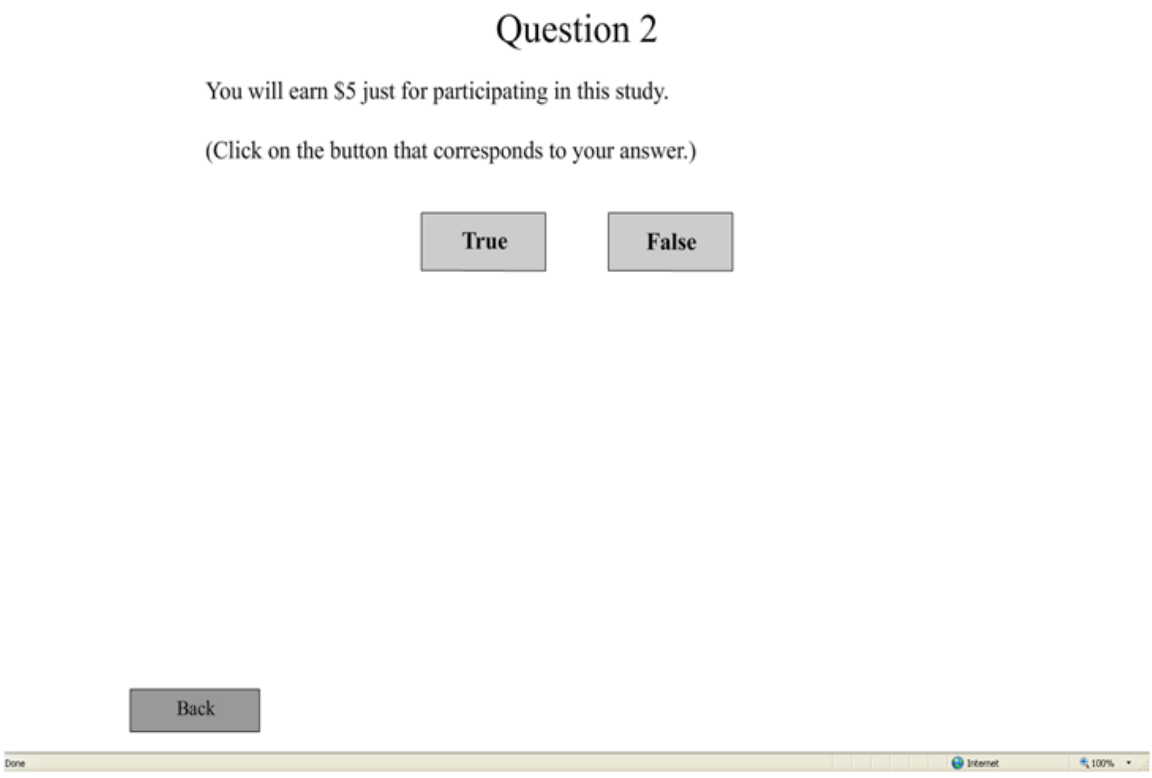
There is no penalty if you answer one of the questions incorrectly.

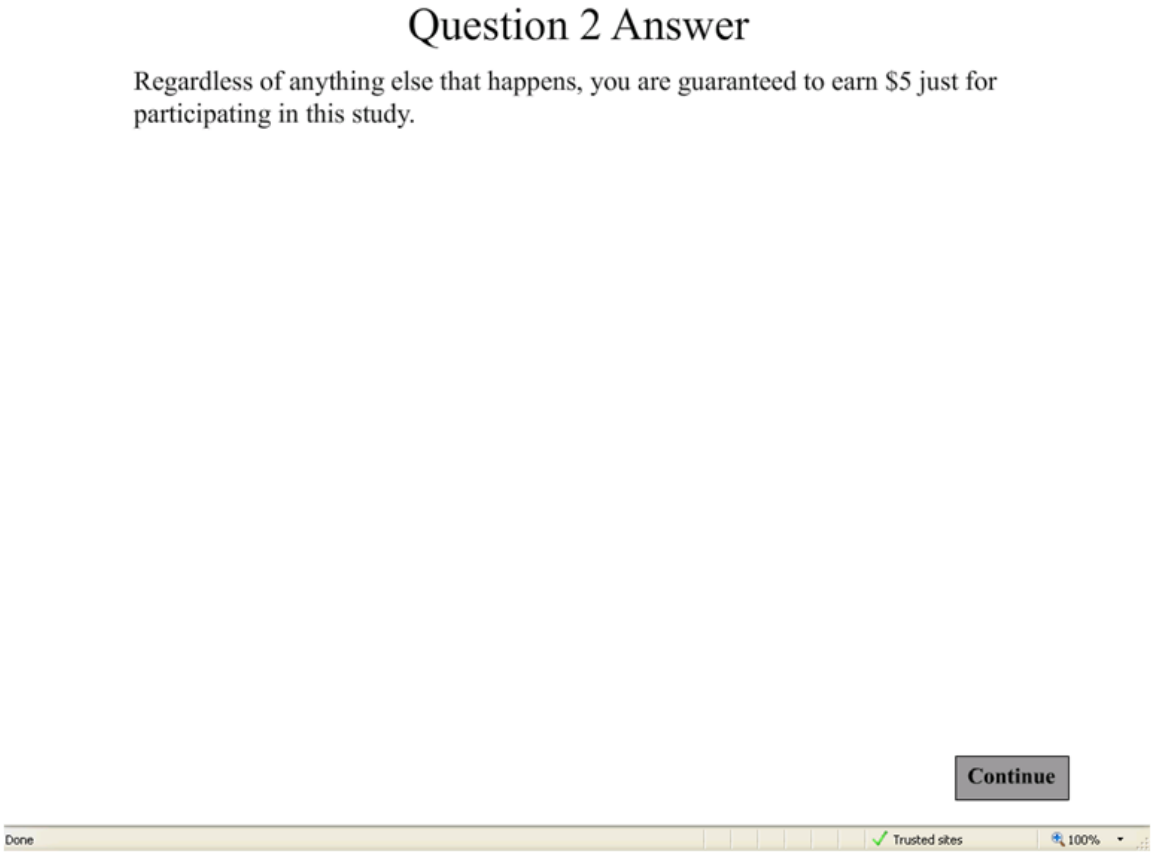
Click the "Continue" button to proceed, or the "Back" button to review any of the prior information.


Question 1
During this study, you are playing the part of the production manager for LeBaron Company.
(Click on the button that corresponds to your answer.)
True
False
Back
Done
Trusted sites
100%

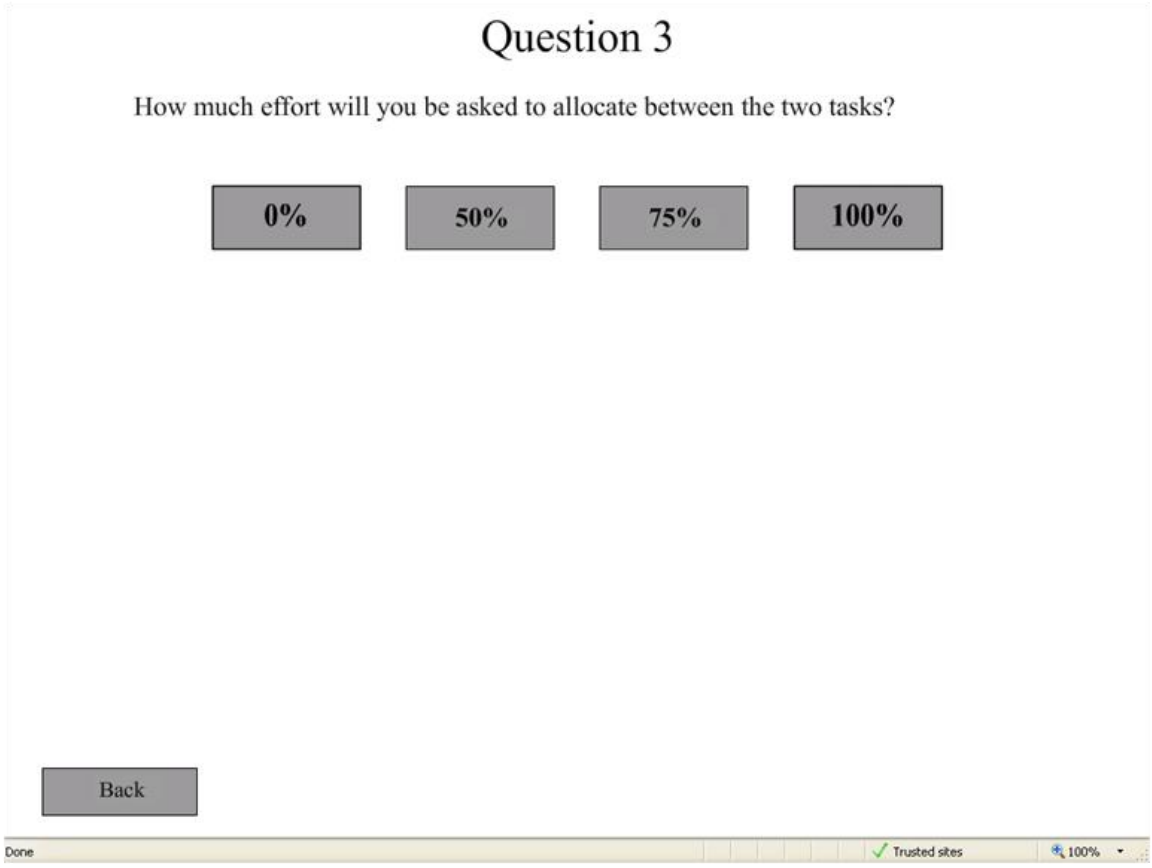


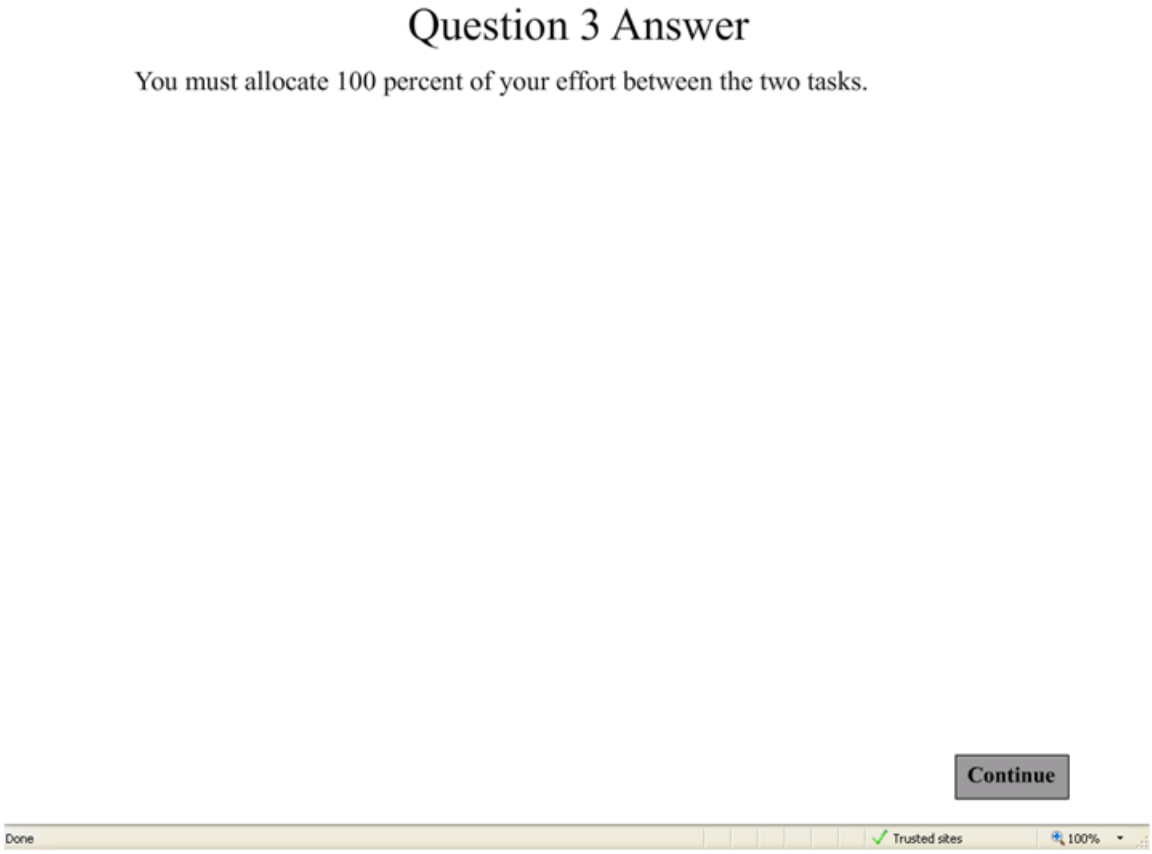
Note: Participants only saw this screen if they selected “False” for question 1.


Question 2
You will earn $5 just for participating in this study.
(Click on the button that corresponds to your answer.)
True
False
Back
Done
Internet
100%



Note: Participants only saw this screen if they selected "False" for question 2.


Question 3
How much effort will you be asked to allocate between the two tasks?
0%
50%
75%
100%
Back
Done
Trusted sites
100%



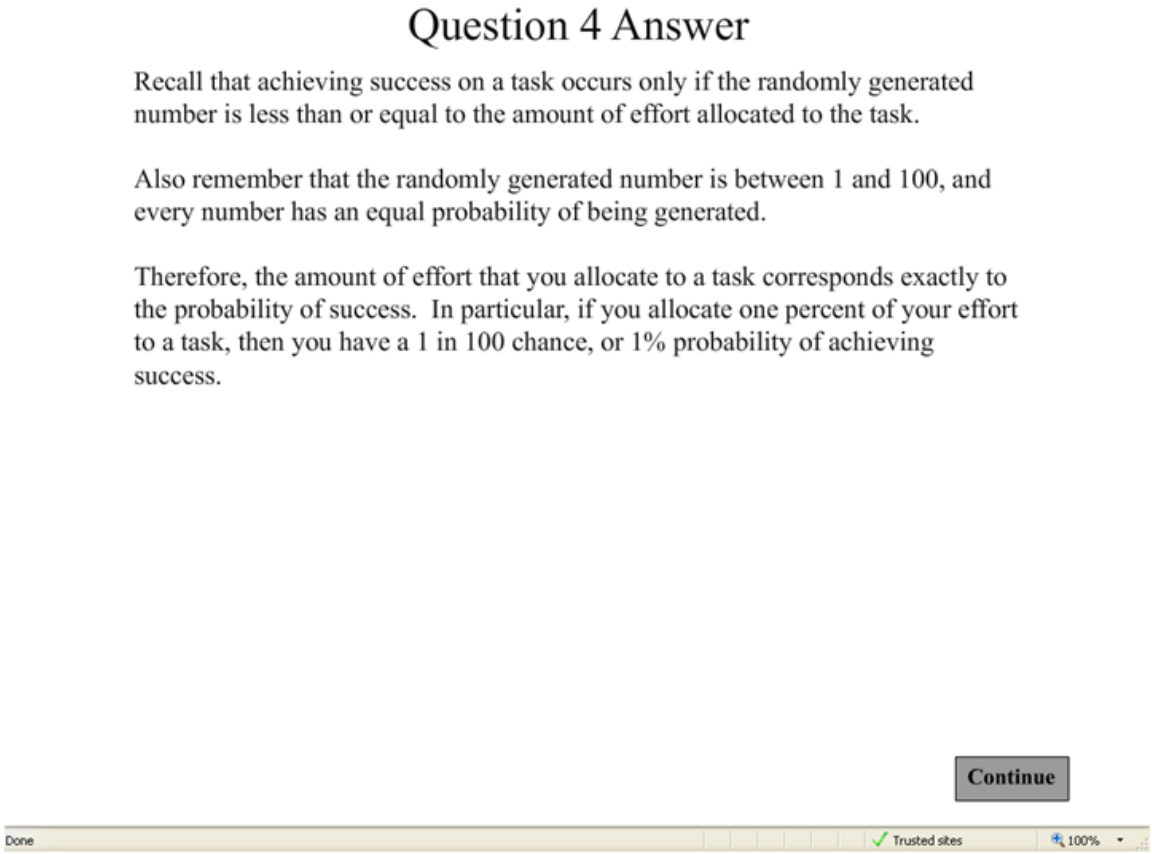
Note: Participants only saw this screen if they did not select "100%" for question 3.

Question 4

If you allocate one percent of your effort to a task, what is the probability of achieving a successful outcome on that task?

0% 1% 10% 100%

Back



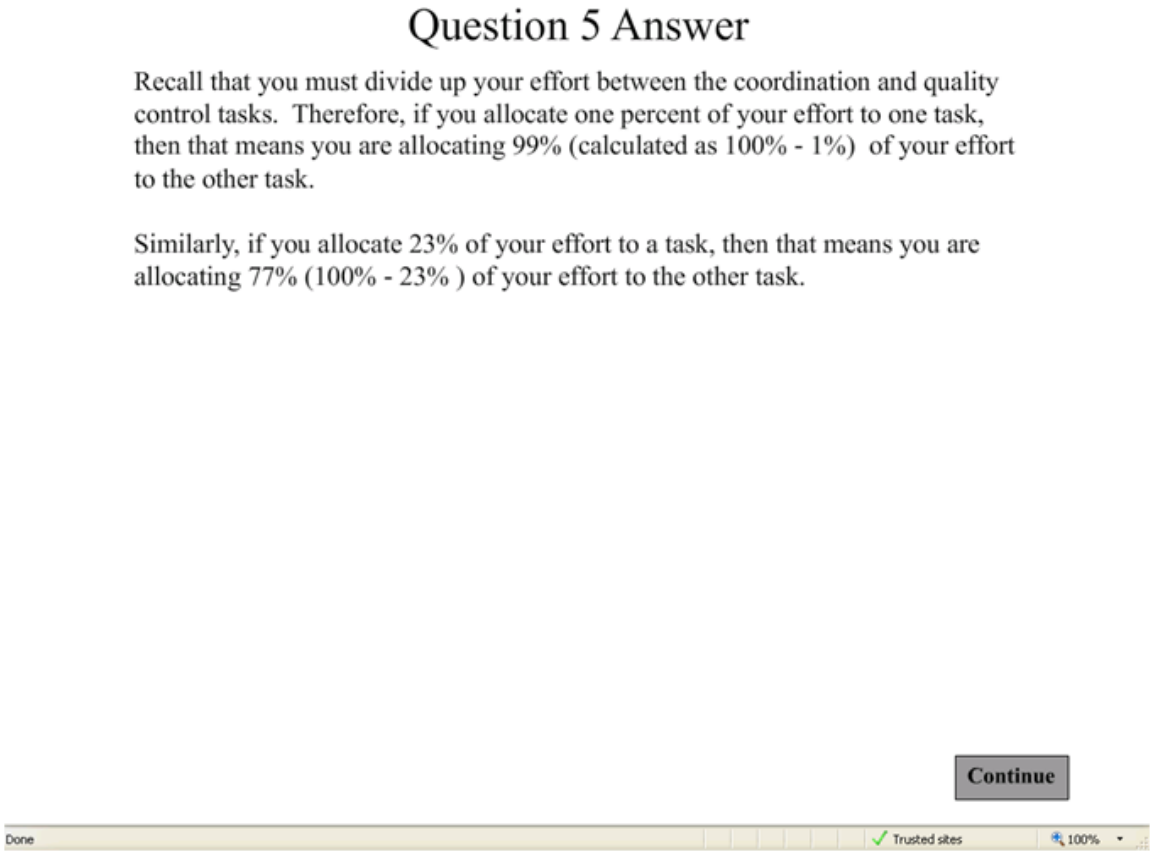
Note: Participants only saw this screen if they did not select "1%" for question 4.

Question 5

If you allocate one percent of your effort to one of the tasks what percent of your effort will be allocated to *the other* task?

0% **1%** **99%** **100%**

Back



Note: Participants only saw this screen if they did not select "99%" for question 5.

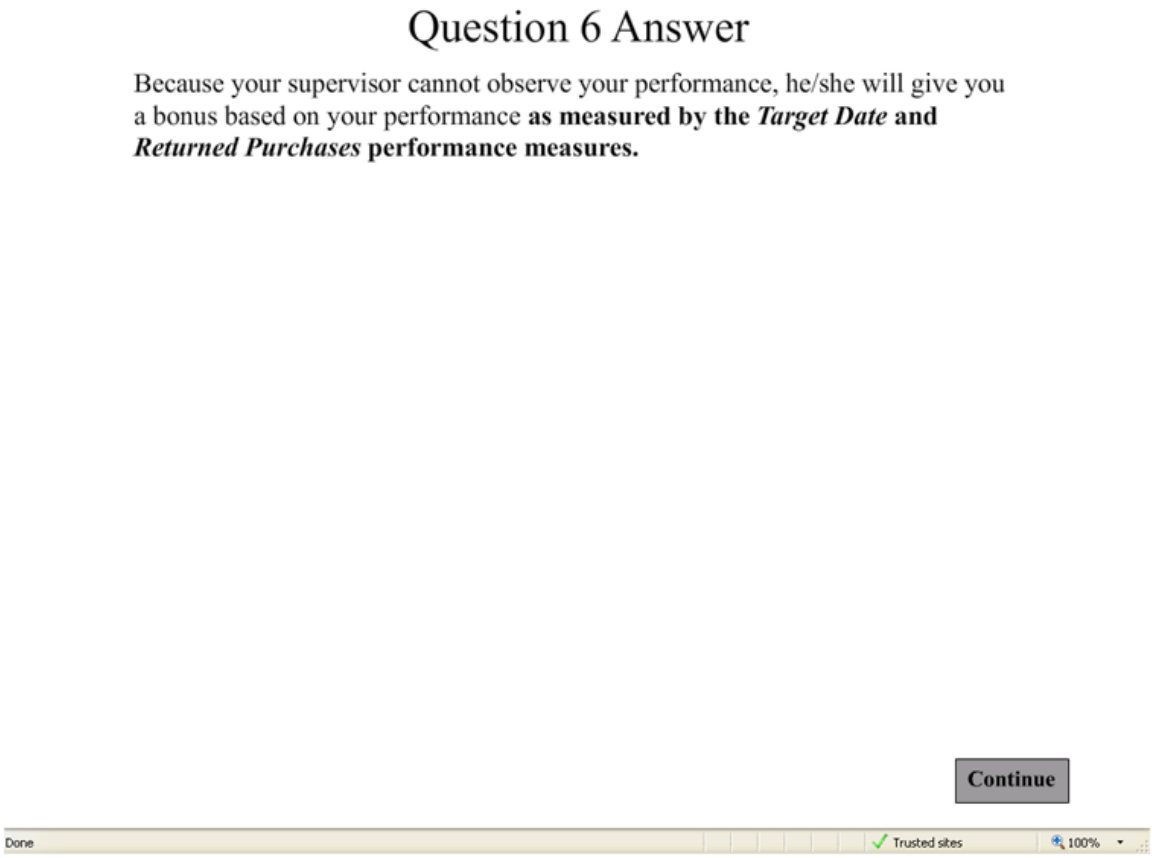
Question 6

Your bonus will be based on your performance and not on the performance indicated by the *Target Date* and *Returned Purchases* performance measures.

(Click on the button that corresponds to your answer.)

True **False**

Back



Note: Participants only saw this screen if they did selected "True" for question 6.

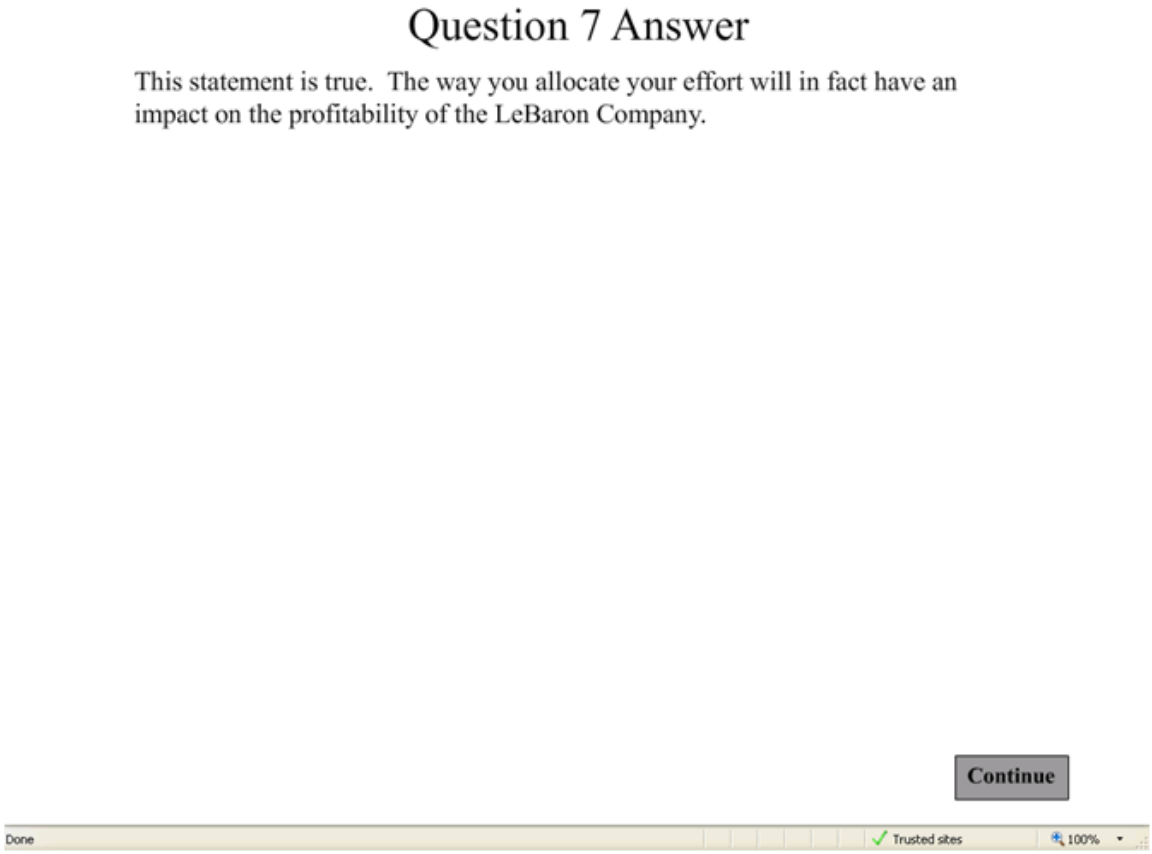
Question 7

Your effort allocation decision will influence the LeBaron Company's profitability.

(Click on the button that corresponds to your answer.)

True **False**

Back



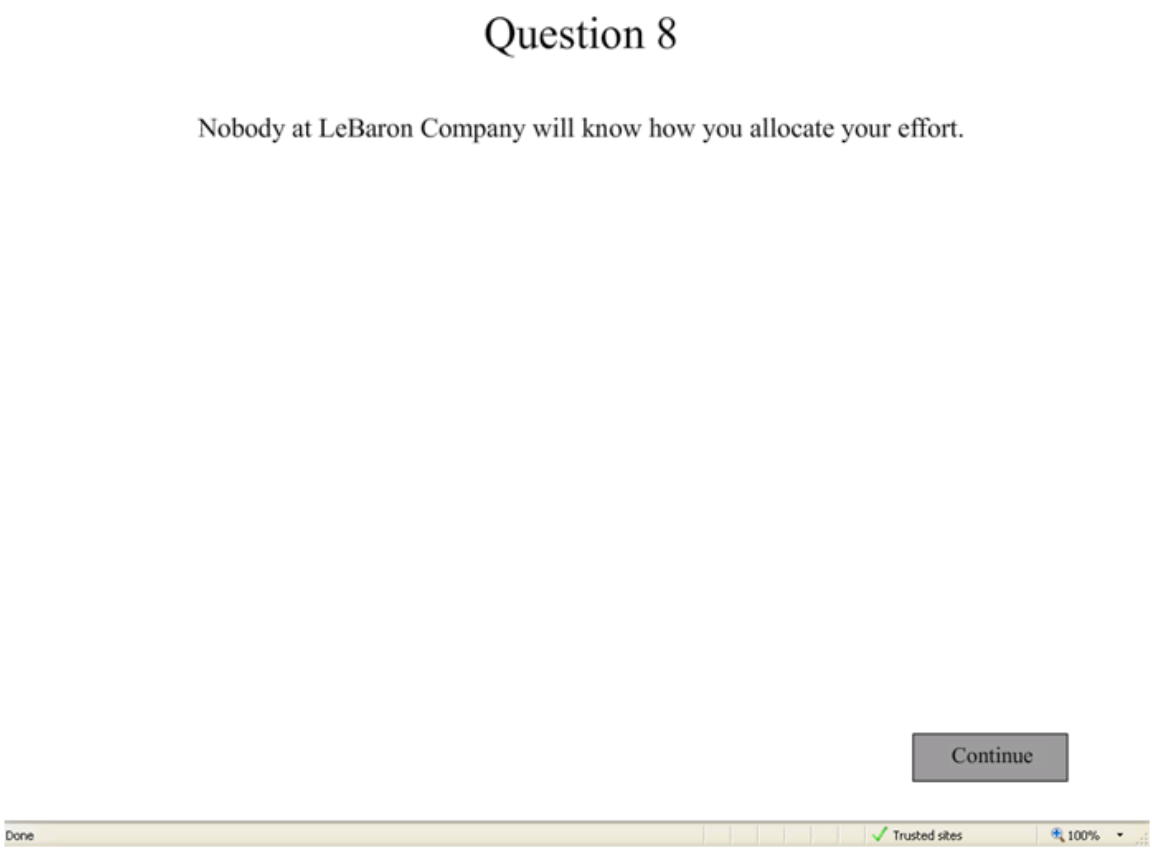
Note: Participants only saw this screen if they selected "False" for question 7.

Question 8

Only your supervisor will know how you allocated your effort.

True **False**

Back



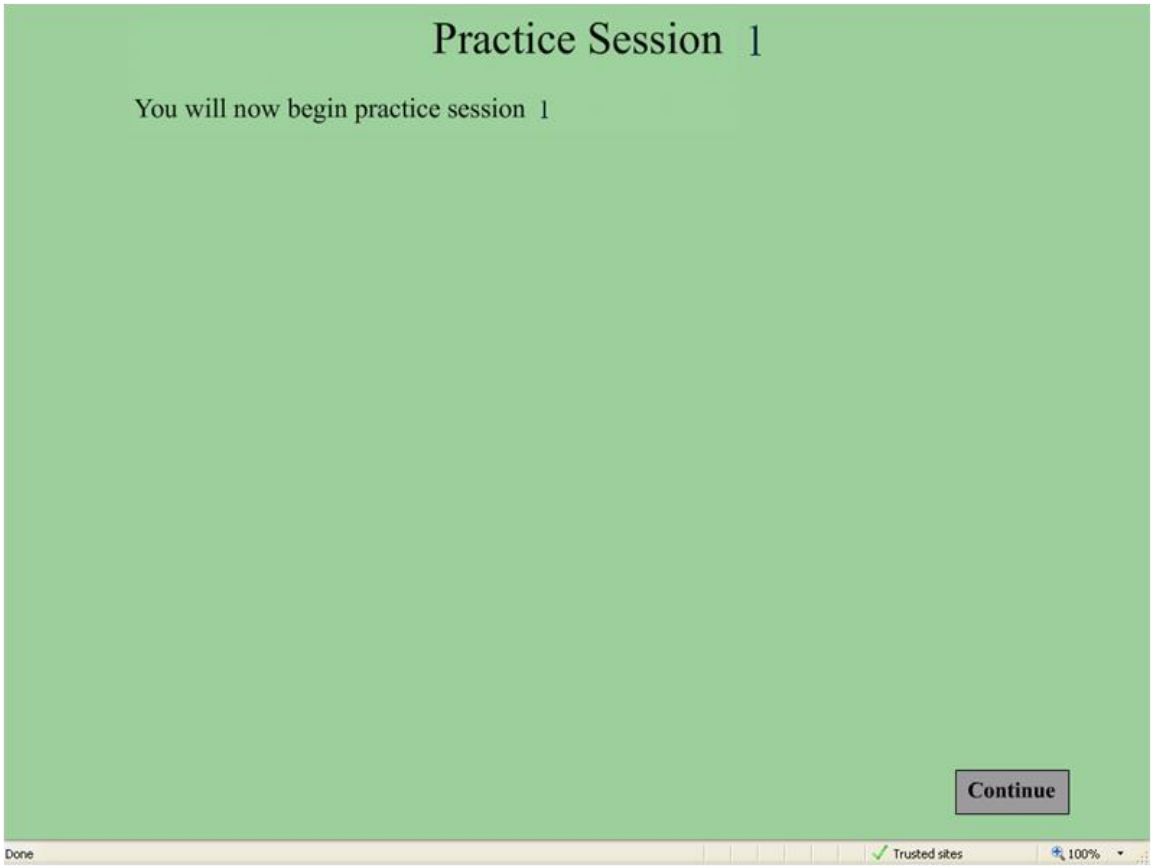
Note: Participants only saw this screen if they selected "False" for question 8.

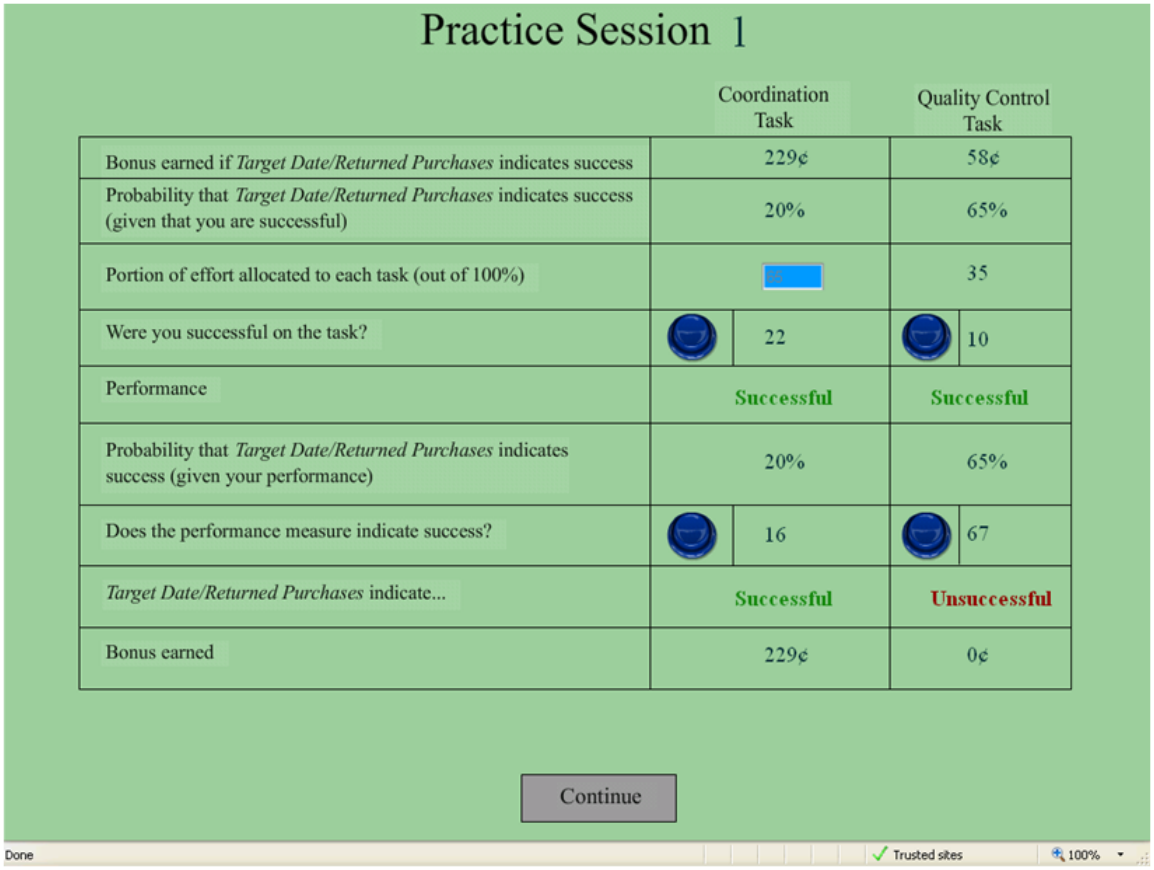
Question Wrap-up

You answered all the questions correctly. You now have the chance to perform several practice sessions. Each practice session is similar in structure to the work session, except that you will **not** be paid for your decisions.

You must complete at least five practice sessions, but no more than fifteen practice sessions, before proceeding to the work sessions in which you will be paid.

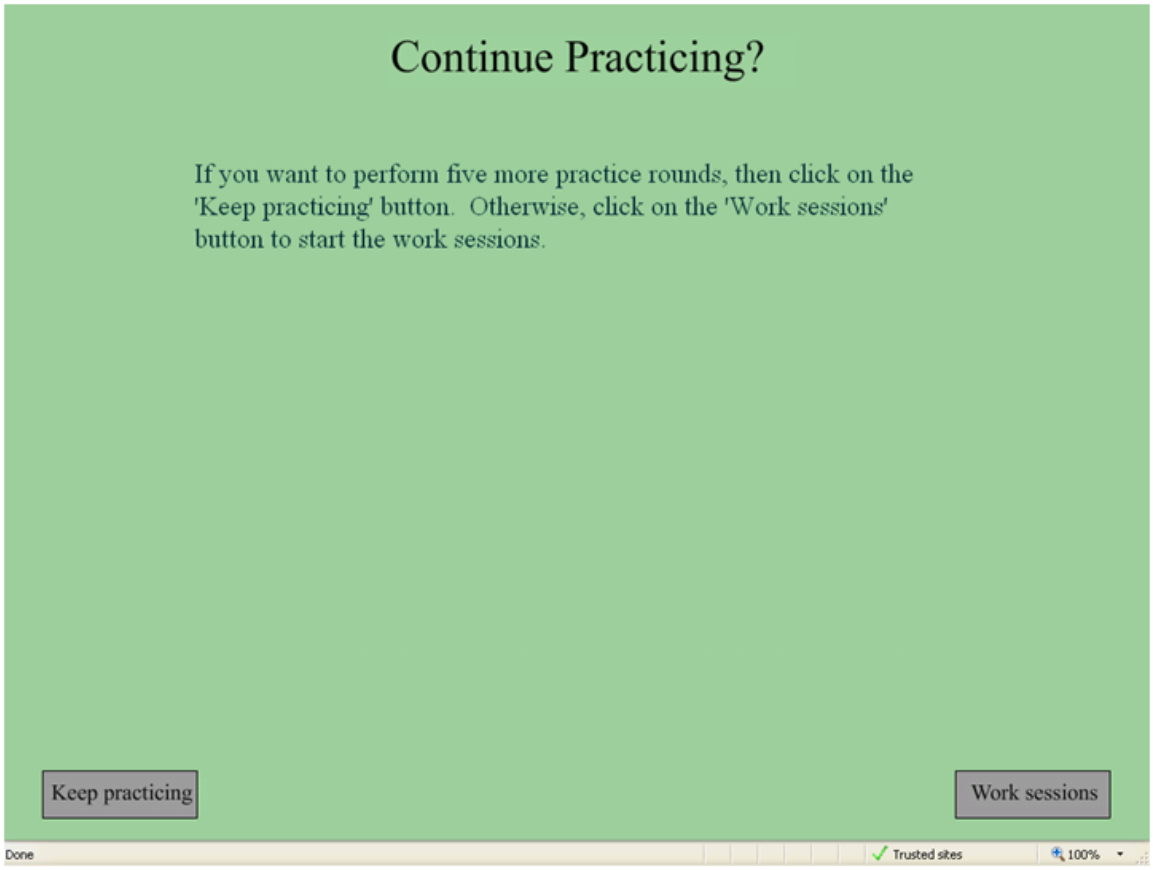
Click on the "Begin practice sessions" button below to begin the practice sessions.

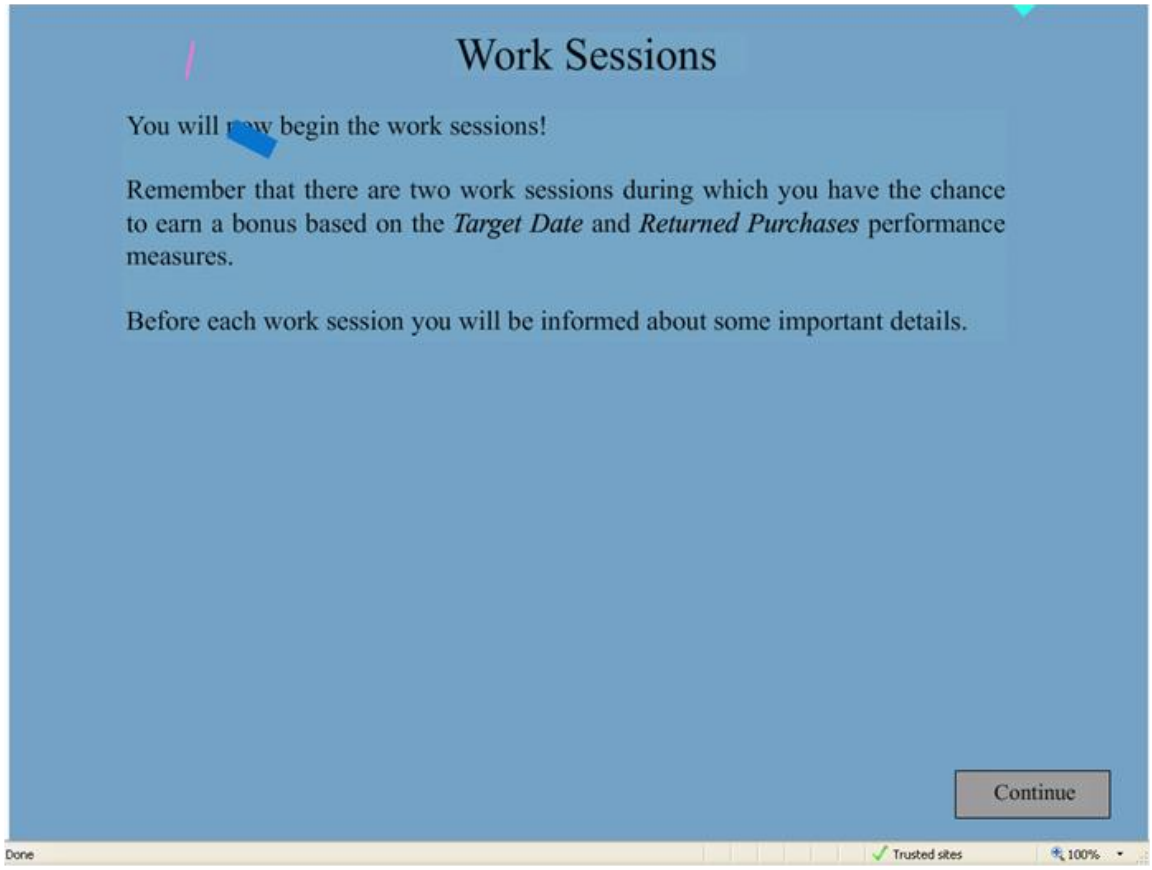

Practice Session 1
You will now begin practice session 1
Continue
Done
Trusted sites
100%

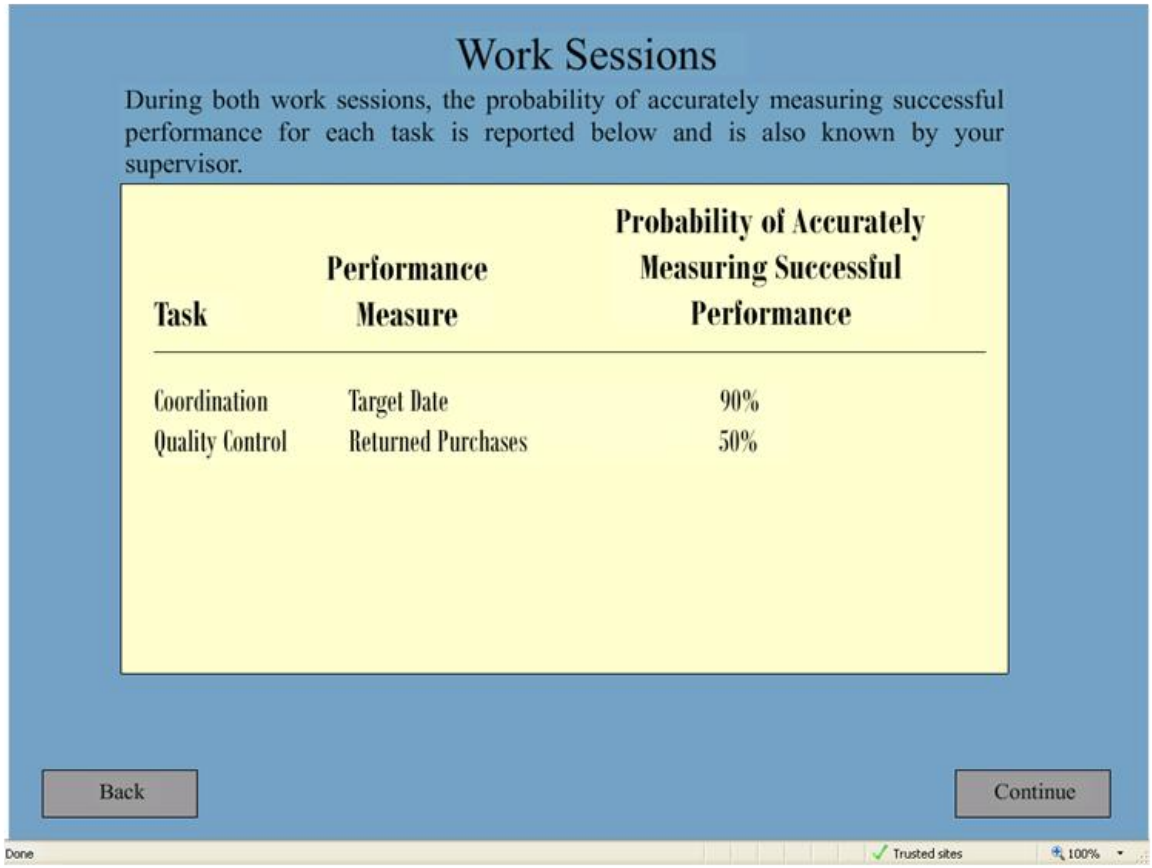


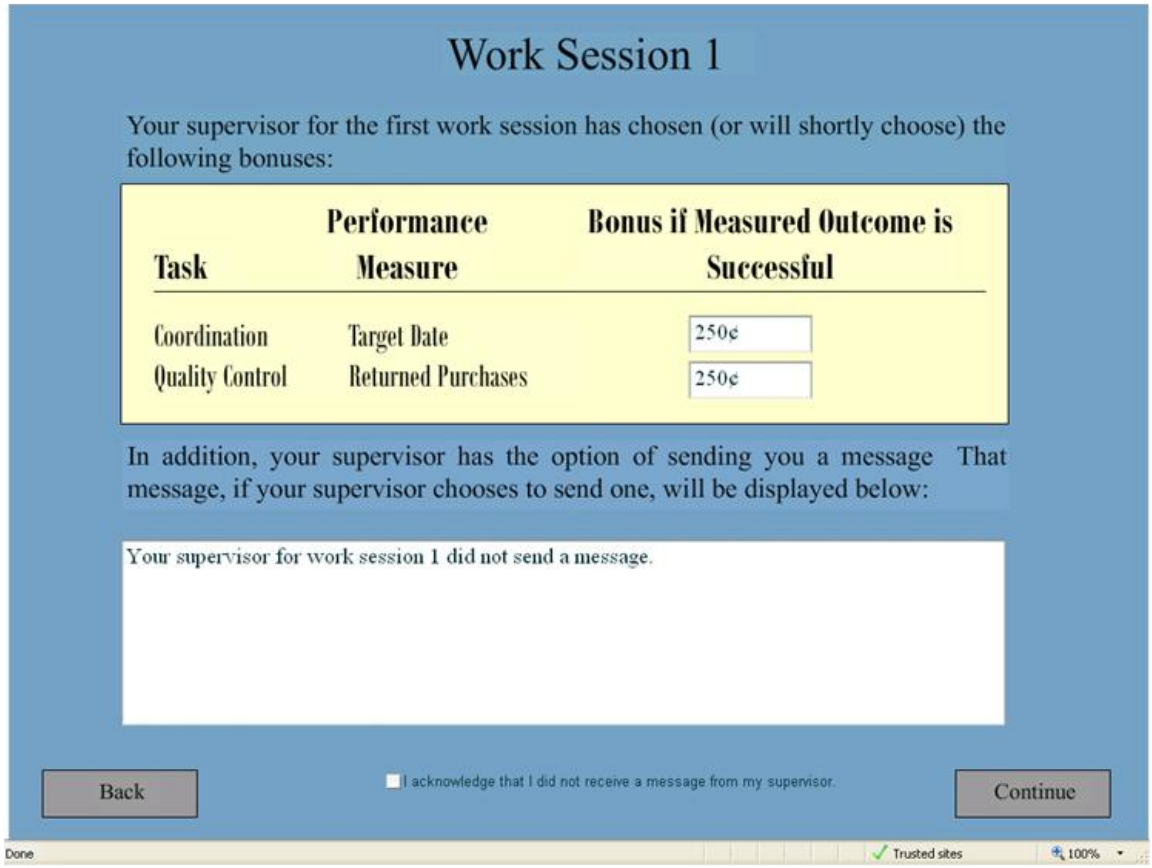
Practice Session 1

	Coordination Task	Quality Control Task
Bonus earned if *Target Date/Returned Purchases* indicates success	229¢	58¢
Probability that *Target Date/Returned Purchases* indicates success (given that you are successful)	20%	65%
Portion of effort allocated to each task (out of 100%)	65	35
Were you successful on the task?	22	10
Performance	Successful	Successful
Probability that *Target Date/Returned Purchases* indicates success (given your performance)	20%	65%
Does the performance measure indicate success?	16	67
Target Date/Returned Purchases indicate...	Successful	Unsuccessful
Bonus earned	229¢	0¢

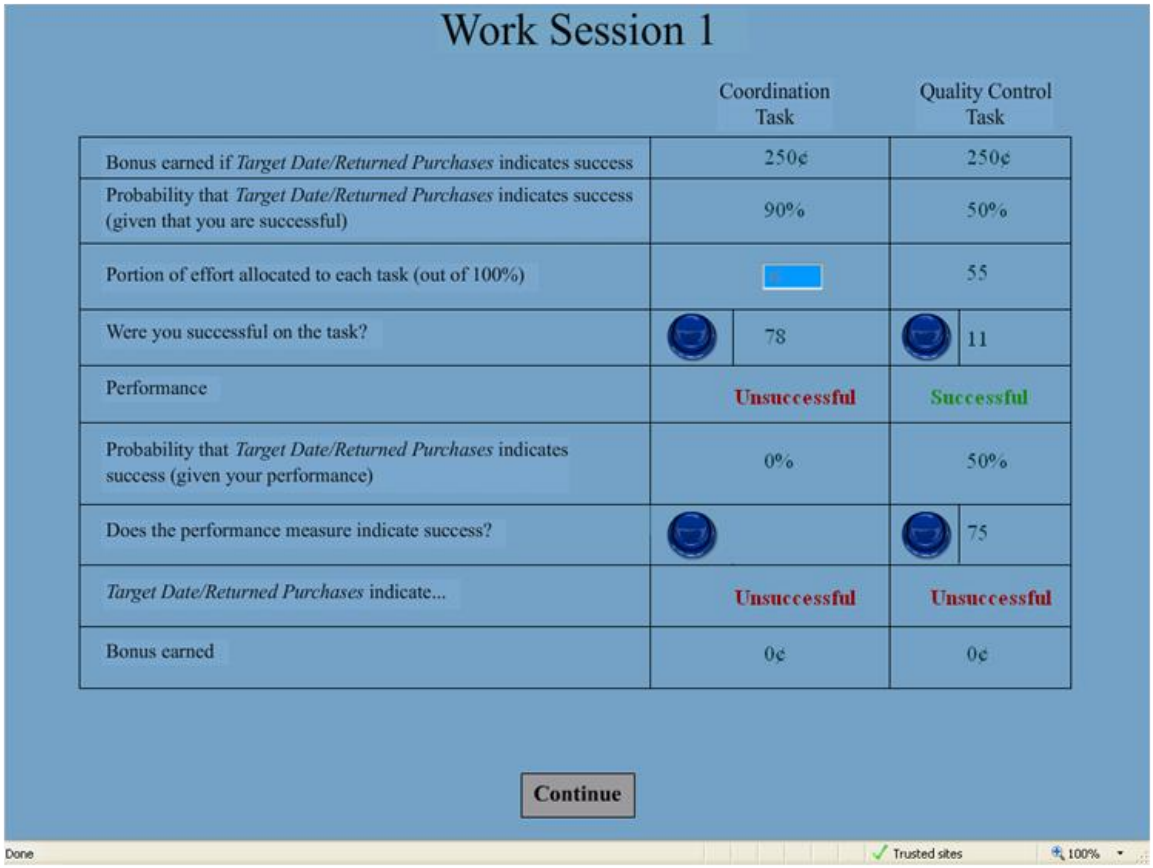

Continue Practicing?
If you want to perform five more practice rounds, then click on the 'Keep practicing' button. Otherwise, click on the 'Work sessions' button to start the work sessions.
Keep practicing
Work sessions
Done
Trusted sites
100%


Work Sessions
You will now begin the work sessions!
Remember that there are two work sessions during which you have the chance to earn a bonus based on the Target Date and Returned Purchases performance measures.
Before each work session you will be informed about some important details.
Continue
Done
Trusted sites
100%

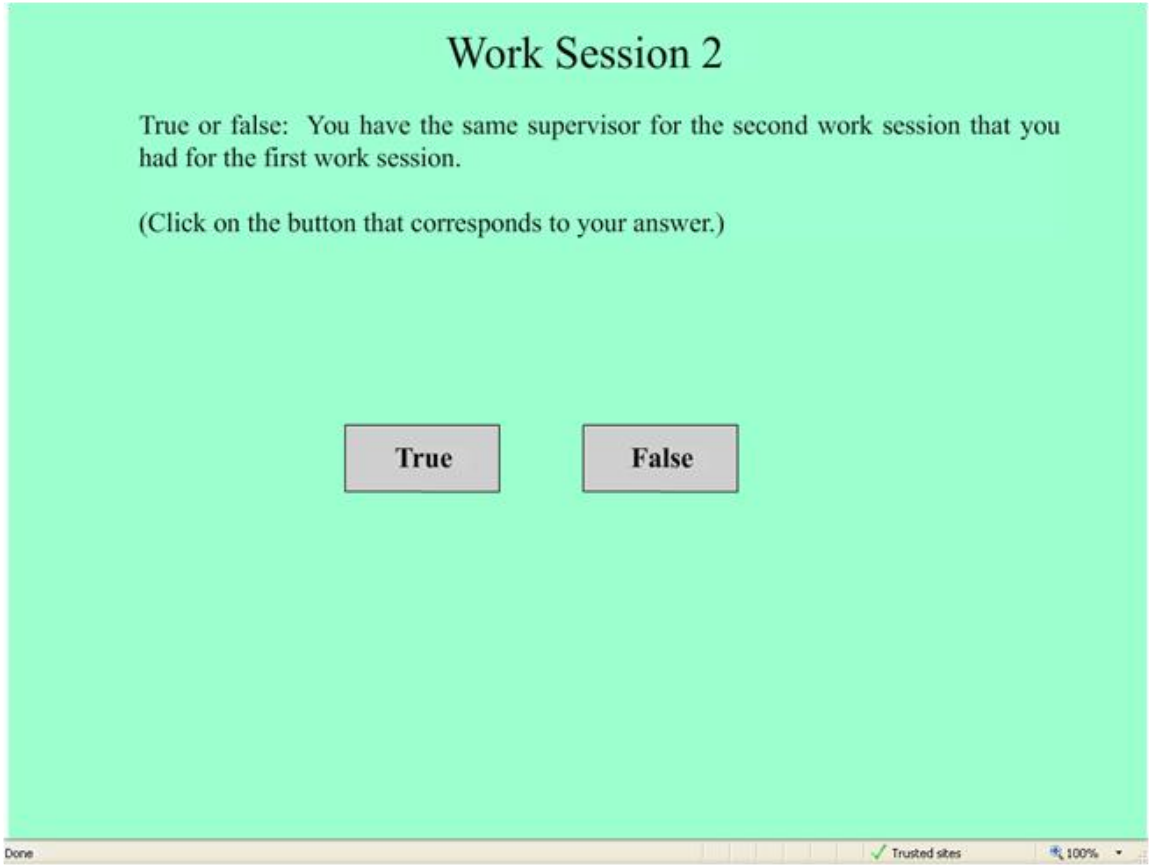

Work Sessions
During both work sessions, the probability of accurately measuring successful performance for each task is reported below and is also known by your supervisor.
Task
Performance Measure
Probability of Accurately Measuring Successful Performance
Coordination
Target Date
90%
Quality Control
Returned Purchases
50%
Back
Continue
Done
Trusted sites
100%



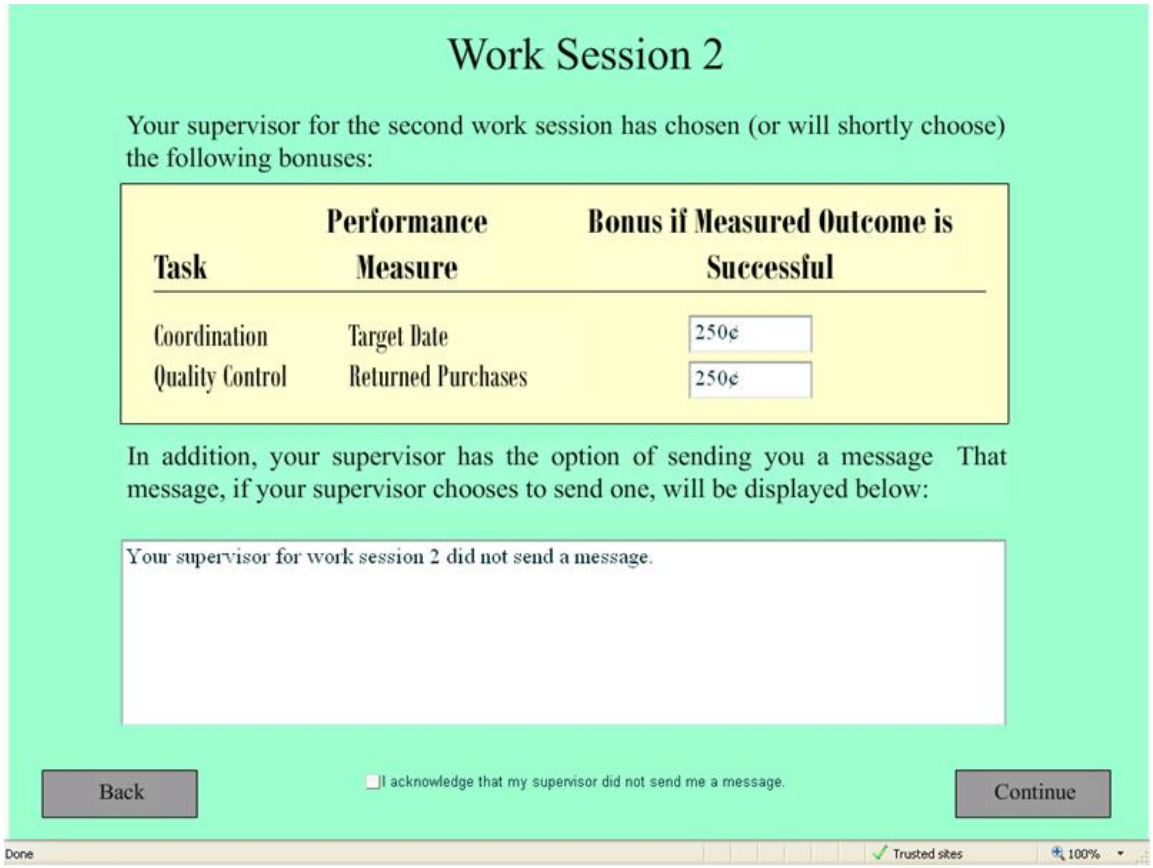
Note: The bonus for the quality control task varied depending on the experimental condition.


Work Session 1
Coordination Task
Quality Control Task
Bonus earned if Target Date/Returned Purchases indicates success
250¢
250¢
Probability that Target Date/Returned Purchases indicates success (given that you are successful)
90%
50%
Portion of effort allocated to each task (out of 100%)
55
Were you successful on the task?
78
11
Performance
Unsuccessful
Successful
Probability that Target Date/Returned Purchases indicates success (given your performance)
0%
50%
Does the performance measure indicate success?
75
Target Date/Returned Purchases indicate...
Unsuccessful
Unsuccessful
Bonus earned
0¢
0¢
Continue
Done
Trusted sites
100%


Work Session 2
You will now begin the second work session. Work session 2 will be similar to work session 1, but there is one important difference: your supervisor for the first work session has retired and you now have a new supervisor.
Your new supervisor will communicate to you the incentive for the second work session, and may also send you a message.
Continue
Done
Trusted sites
100%


Work Session 2
True or false: You have the same supervisor for the second work session that you had for the first work session.
(Click on the button that corresponds to your answer.)
True
False
Done
Trusted sites
100%

Note: Participants only saw this screen if they selected "True" on the previous screen.



Note: The bonuses were always the same as the first work session. Also, the message from the supervisor varied depended on the condition to which the participant was assigned. Participants in the RO/50% condition received the following message:

> Please allocate your effort equally between tasks.

Participants in the RO/10% condition received the following message:

> Please allocate 90 percent of your effort to the coordination task.

Participants in the RCE/50% condition received the following message:

> Please allocate your effort equally between tasks. Both tasks are equally important for LeBaron Company to continue making profit and being a viable business. Customer satisfaction quickly decreases if 1) our clothing is not on the shelf in a timely manner and 2) our customers do not get

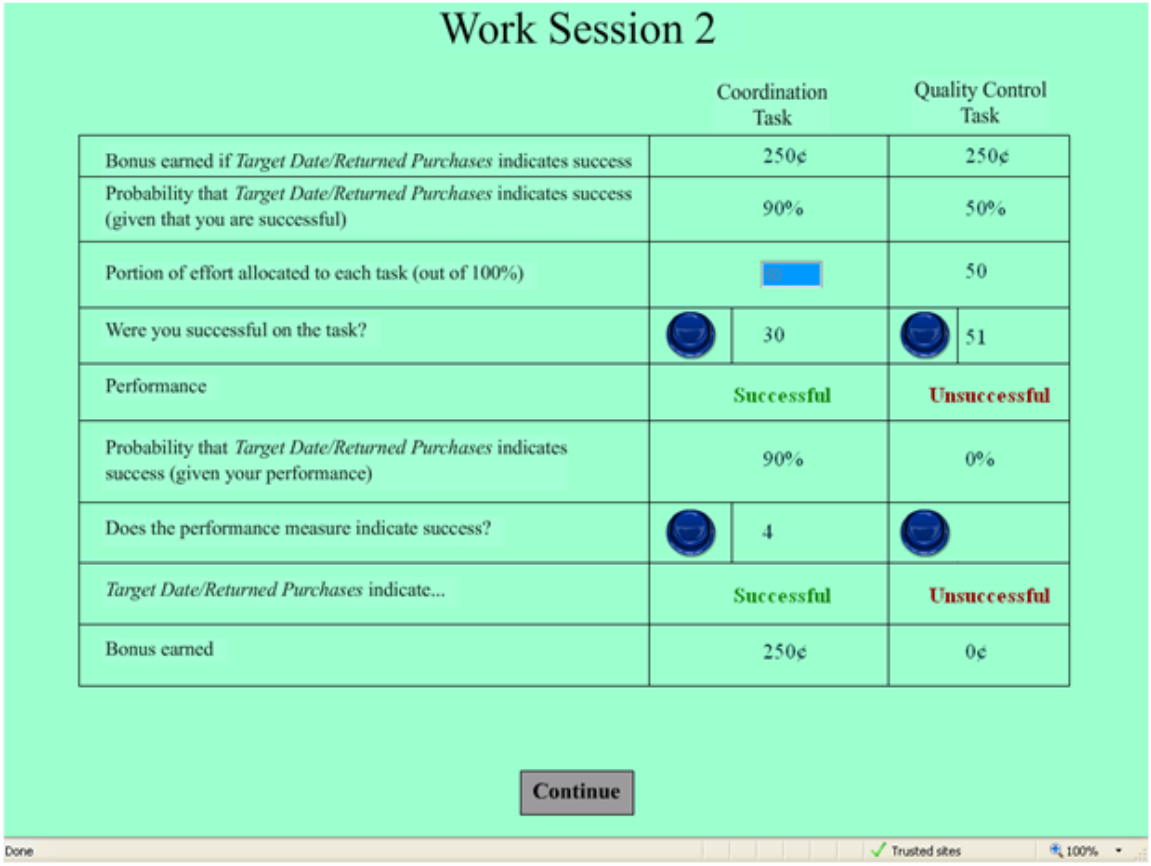
> their money's worth from our clothing. This means that you need to 1) successfully coordinate activities so that our clothing is on the shelf by the targeted date, and 2) meet the quality standards so that customers are not upset with the quality of their clothing. Successfully performing only one task basically has the same impact on LeBaron Company's profitability as successfully performing neither task, and will quickly lead to LeBaron Company's making losses and possibly even shutting down.

Participants in the RCE/10% condition received the following message:

> Please allocate 90 percent of your effort to the coordination task. The coordination task is most important for LeBaron Company to continue making profit and being a viable business. Customer satisfaction only slightly decreases if our customers do not get their money's worth from our clothing, but customer satisfaction quickly decreases if our clothing is not on the shelf in a timely manner. This means that it is only mildly important to meet the quality standards, but it is extremely important to successfully coordinate activities so that our clothing is on the shelf by the targeted date and customers are not upset with the variety of products offered. Failure to allocate effort in the desired manner will quickly lead to LeBaron Company's making losses and possibly even shutting down.

Participants in the RIE condition received the following message:

> Please allocate your effort equally between tasks. There are rumors that some of our shareholders are in financial trouble and want to increase LeBaron's share price. As you know, the price for LeBaron's shares depends on both this year's profit and expectations about long-term profit. The tough part is that while we know that many factors influence this year's profit, it is hard to tell which set of factors is the most important. Nor do I know if maximizing this year's profit will maximize the company's long-term profit. I have no idea if giving all tasks equal priority is the right thing to do. In any case, it all may come down to how the market demand shapes up and nothing we do may matter.

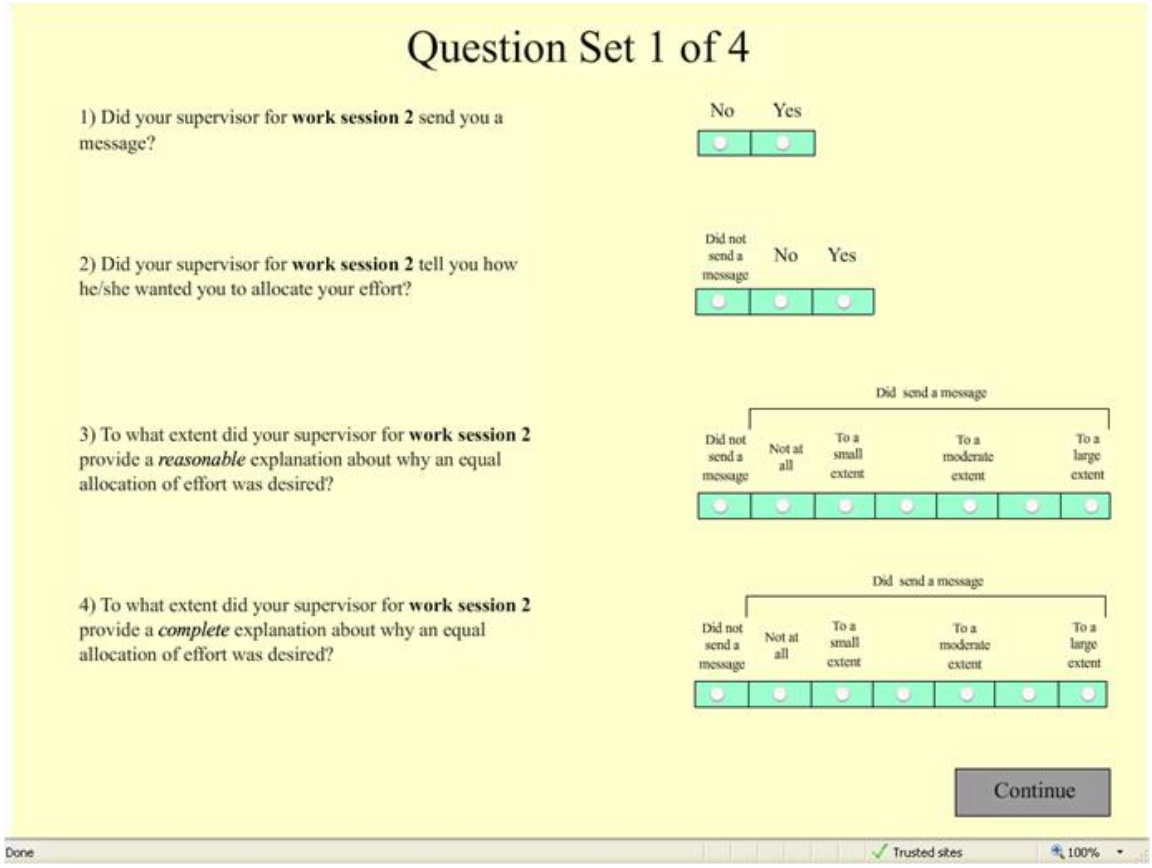


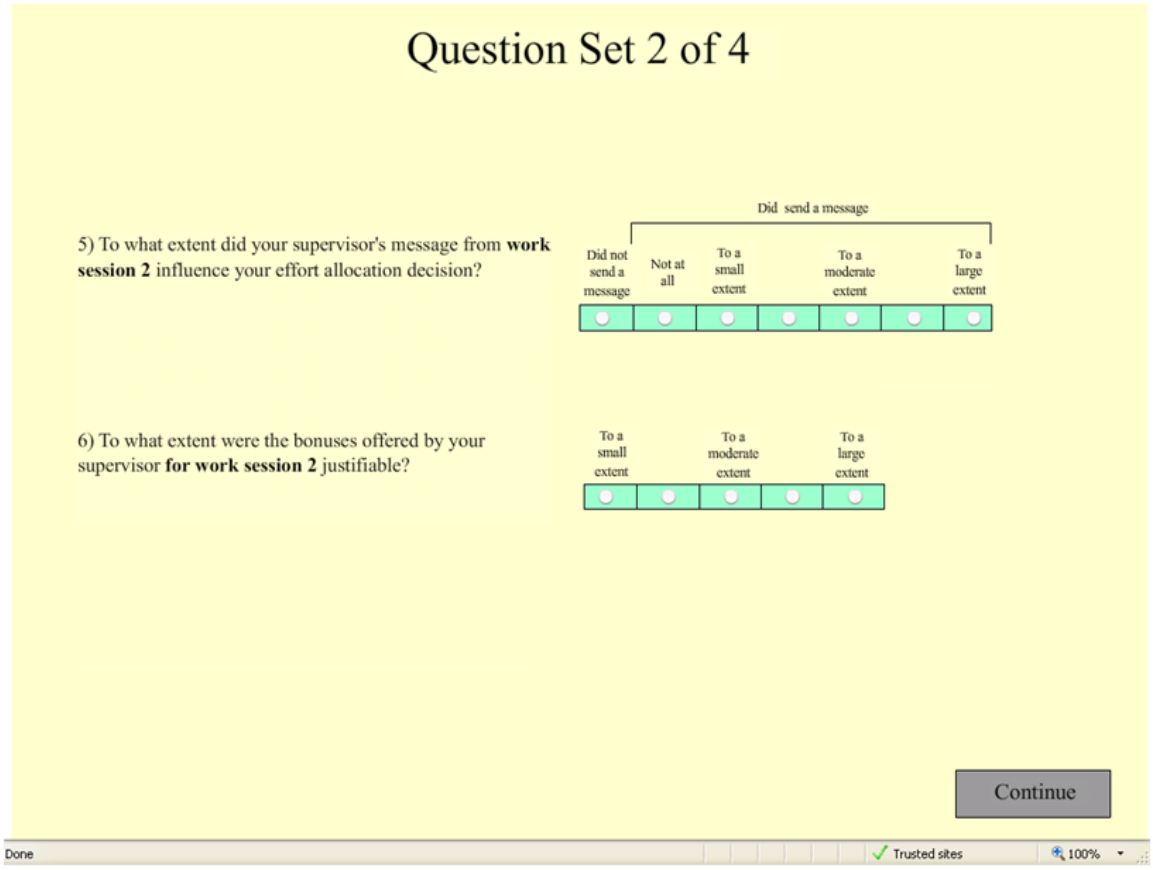
Work Session 2

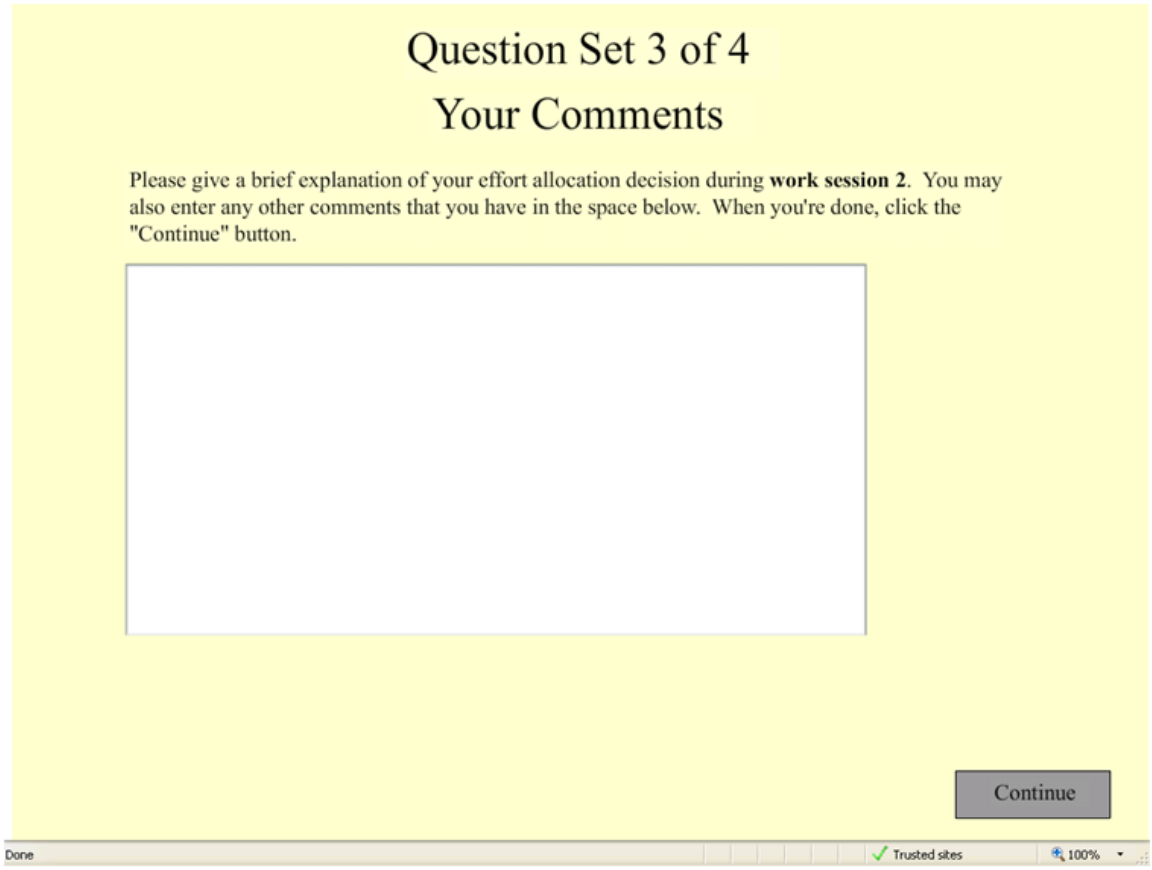
	Coordination Task	Quality Control Task
Bonus earned if *Target Date/Returned Purchases* indicates success	250¢	250¢
Probability that *Target Date/Returned Purchases* indicates success (given that you are successful)	90%	50%
Portion of effort allocated to each task (out of 100%)	50	50
Were you successful on the task?	30	51
Performance	Successful	Unsuccessful
Probability that *Target Date/Returned Purchases* indicates success (given your performance)	90%	0%
Does the performance measure indicate success?	4	
Target Date/Returned Purchases indicate...	Successful	Unsuccessful
Bonus earned	250¢	0¢

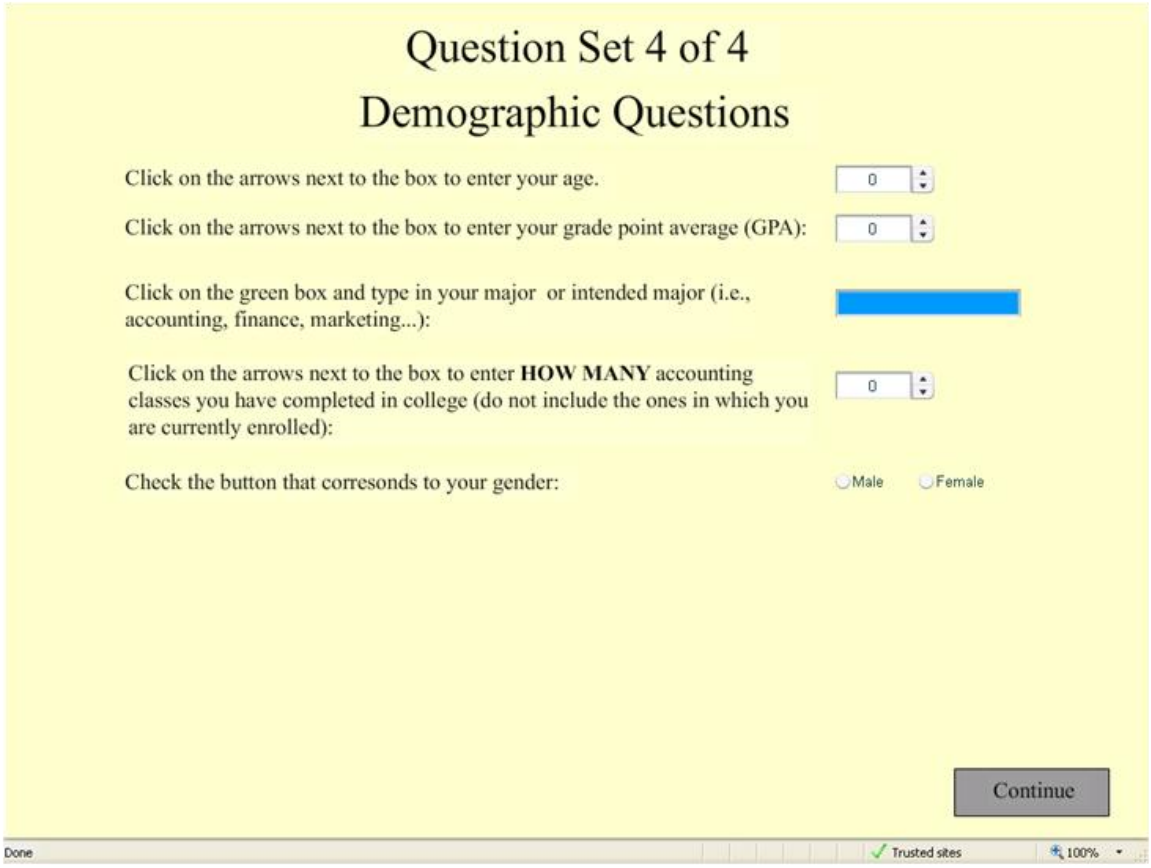
Continue

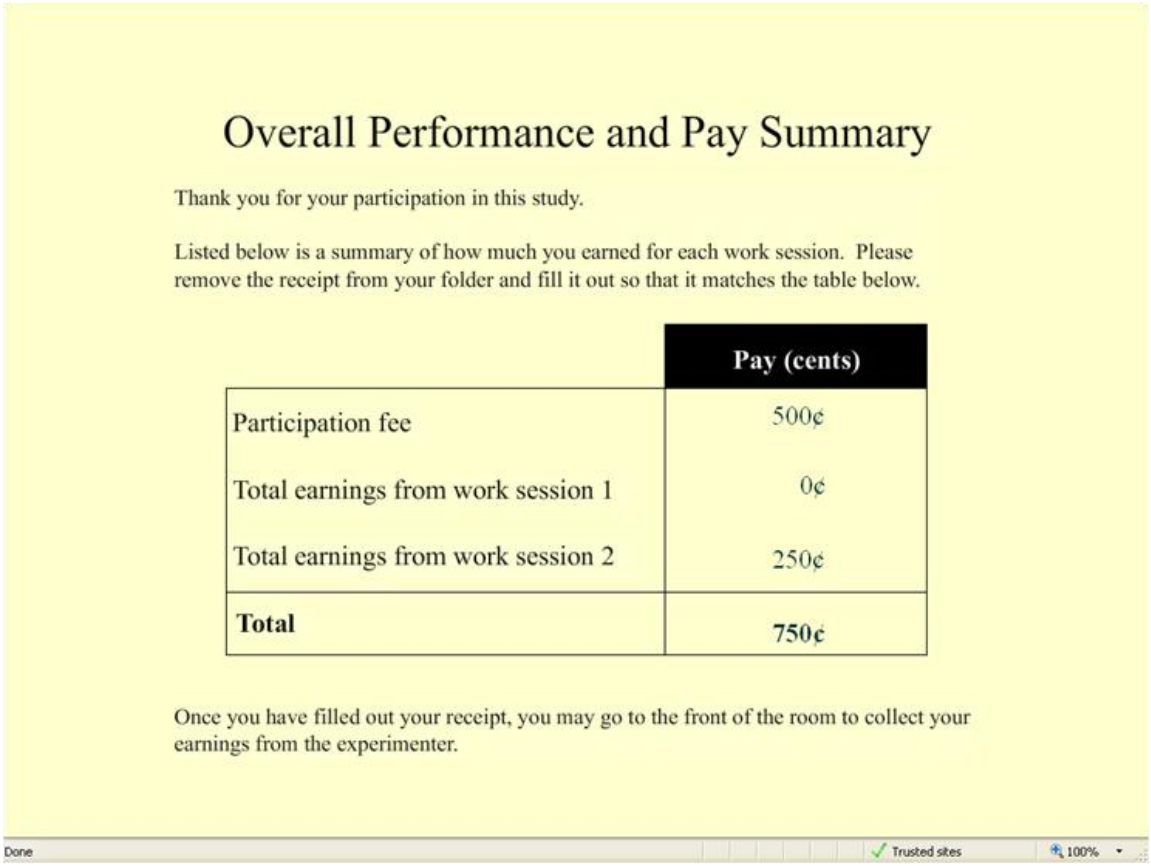

Follow-up Questions
The next several screens contain various questions regarding your decisions and demographics.
Click on the button below for the first question.
Continue
Done
Trusted sites
100%


Question Set 1 of 4
1) Did your supervisor for **work session 2** send you a message?
No
Yes
2) Did your supervisor for **work session 2** tell you how he/she wanted you to allocate your effort?
Did not send a message
No
Yes
3) To what extent did your supervisor for **work session 2** provide a *reasonable* explanation about why an equal allocation of effort was desired?
Did send a message
Did not send a message
Not at all
To a small extent
To a moderate extent
To a large extent
4) To what extent did your supervisor for **work session 2** provide a *complete* explanation about why an equal allocation of effort was desired?
Did send a message
Did not send a message
Not at all
To a small extent
To a moderate extent
To a large extent
Continue
Done
Trusted sites
100%


Question Set 2 of 4
5) To what extent did your supervisor's message from **work session 2** influence your effort allocation decision?
Did send a message
Did not send a message
Not at all
To a small extent
To a moderate extent
To a large extent
6) To what extent were the bonuses offered by your supervisor **for work session 2** justifiable?
To a small extent
To a moderate extent
To a large extent
Continue
Done
Trusted sites
100%


Question Set 3 of 4
Your Comments
Please give a brief explanation of your effort allocation decision during **work session 2**. You may also enter any other comments that you have in the space below. When you're done, click the "Continue" button.
Continue
Done
Trusted sites
100%


Question Set 4 of 4
Demographic Questions
Click on the arrows next to the box to enter your age.
0
Click on the arrows next to the box to enter your grade point average (GPA):
0
Click on the green box and type in your major or intended major (i.e., accounting, finance, marketing...):
Click on the arrows next to the box to enter HOW MANY accounting classes you have completed in college (do not include the ones in which you are currently enrolled):
0
Check the button that corresonds to your gender:
Male
Female
Continue
Done
Trusted sites
100%



Overall Performance and Pay Summary

Thank you for your participation in this study.

Listed below is a summary of how much you earned for each work session. Please remove the receipt from your folder and fill it out so that it matches the table below.

	Pay (cents)
Participation fee	500¢
Total earnings from work session 1	0¢
Total earnings from work session 2	250¢
Total	**750¢**

Once you have filled out your receipt, you may go to the front of the room to collect your earnings from the experimenter.

Note: The pay reported on this screen corresponded to the earnings of the participants during both work sessions.

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